Seafood
EXPORT JOURNAL

With Best Compliments From

I.T.C. LIMITED

INTERNATIONAL BUSINESS DIVISION

Regional Office:

ITC Centre, 4th Floor, Russel Street, Calcutta 700 071

Tel : 033 2260919, 2468892 Fax : 033 2498283

e-mail : sbitc@cal2.vsnl.net.in

Website : www.itcibd.com

Branch Office :

2/19/1, Bhupati Raju Street, Sivaraopet, Bhimavaram - 534 202

Tel / Fax : 08816 27959

OFFICIAL JOURNAL OF THE SEAFOOD EXPORTERS ASSOCIATION OF INDIA

Vol. XXXII, No. 11 November 2001

CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE
RESOURCE CENTRE MANGALORE
14/2/02

Seafood EXPORT JOURNAL

Willingdon Island, Cochin 682 003. Tel : 0484-666152, 666572. Fax : 667470. E-mail : seaihq@md3.vsnl.net.in

EDITORIAL BOARD

Regional Presidents

K. P. Thomas (Gujarat)
Roozbeh Daruwalla (Maharashtra)
K. H. Saleem (Karnataka)
Abraham J. Tharakan (Kerala)
D.B.R. Reddy (Tamil Nadu)
Y. Surya Rao (Andhra Pradesh)
R.N. Misra (Orissa)
S. Ramalingam (West Bengal)

EDITOR

Sona Philip

Printed & Published by

Sandu Joseph
Secretary,
The Seafood Exporters
Association of India.

Cover Courtesy
MPEDA

Printed at
Printers Castle, Cochin 682 016.

The material published in this magazine does not reflect the official view of The Seafood Exporters Association of India, or any other organisation, unless so stated specifically.

This month

Status and scope of seashell export 3
Shellfish occupies a major portion of the Indian marine resources. A paper on the status and scope of seashell export.

A case study of Red Gill Syndrome 9
A case study was conducted from January 1999 to July 2001 to observe the Red Gill Syndrome on shrimp broodstock. The details.

Trends in shrimp aquaculture of India 13
Shrimp aquaculture has been practiced in India for centuries on a traditional manner on certain coastal states. A paper on the recent trends with specific reference to Andra Pradesh.

Mud crab - Culture and Fattening Techniques 25
Mud crabs has captured excellent markets in the developed countries due to its increasing demand as a favourite of epicurian governments. A paper on the culture and fattening techniques and the status and prospects of mud crab.

Mid term review of monetary and credit policy 31
RBI Governor has presented the Mid term review of monetary and credit policy for 2001-02.
An abstract of the Governor's speech

FLAKE-ICE
GENEGLACE®
TECHNOLOGY

Flake ice by Geneglace

From 0.5 to 50 tons per day,

the broadest range of industrial ice makers worldwide.

Simple, efficient and reliable, Geneglace ice generators produce a top quality flake ice.

Fishermen, supermarkets, meat processors, civil engineers, ski resorts...

All these professionals use Geneglace as the quality ingredient in their recipe for success.

Manufacturer in France : FRIGOFRANCE SA
Fax +33 2 40 65 04 88 - Tel + 33 2 40 32 06 06
Email : contact@geneglace.com
Distributor in India : INDUSTRIAL REFRIGERATION PVT Ltd
Fax : +91 22 204 4944 - Tel : +91 22 204 11 83 / 85
Email : allstate@hathway.com

www.geneglace.com

Geneglace combis

Orbital silos

Ice-packs

Ice generators

FLAKE-ICE
GENEGLACE
TECHNOLOGY

Wherever you are, we have the solution.

Status and Scope of Seashell Export

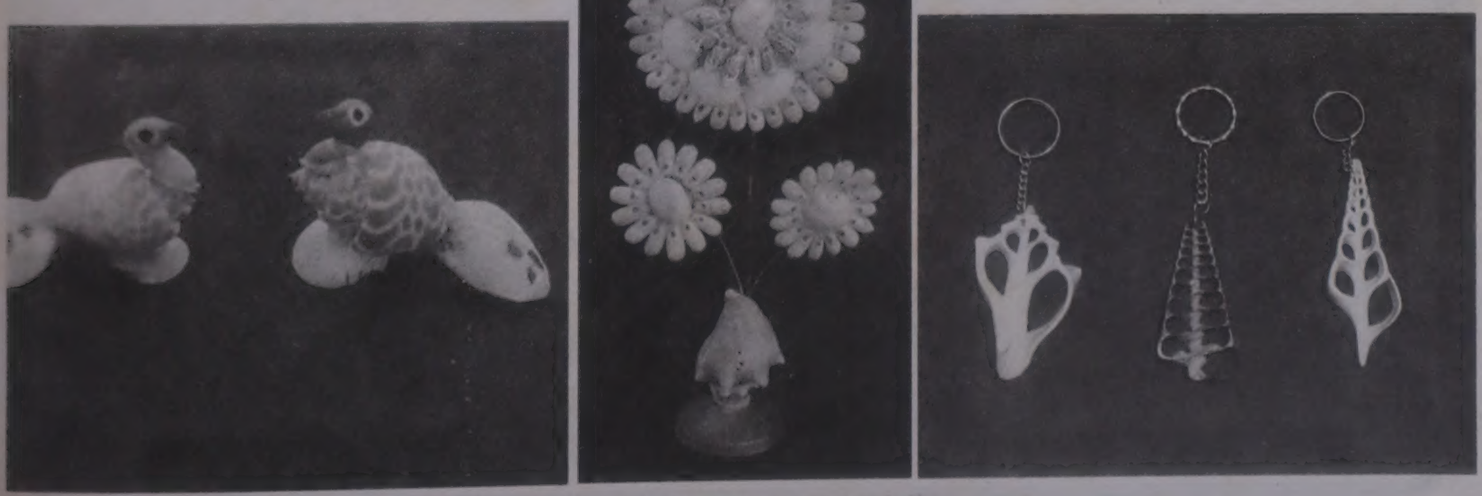
Dr. B. Srikrishnadhas
Fisheries College and Research Institute, Thoothukkudi - 628 008.

Shellfishes constitute to be a major portion of the marine resources in India. The shrimps, lobsters, crabs, squids and cuttlefishes are the main groups contributing for the shellfish fishery and earn foreign exchange by way of export. The other important groups are the bivalve and gastropod molluscs. Though the former groups of shellfishes have food value, the latter groups have both food value and ornamental or medicinal value. The molluscs have colourful and beautiful shells of different sizes and shapes which are highly valued as ornamental materials. In addition, the shells are good source of calcium. High quality calcium for medicinal purpose is prepared from the shells. While the bivalve and gastropod molluscs have external shells, the cephalopod molluscs, the cuttlefishes are having internal shells, which are also valued for both. The seashells and cuttlefish bones are exported ever since the export of marine products started. The external shells of the bivalve and gastropod molluscs fall under seashells, while the internal shells of cuttlefishes are termed as cuttlefish bones.

There is no separate statistics for the landing of the seashells. However separate statistics are available for the quantity and value of such products exported from India. Table I & 2 gives the quantity and value of the seashells and cuttlefish bones exported from India during 1966-1997. The quantity of seashells exported varied from 440kg (1993) to 1256 tons (1981). The value of the seashells exported ranged from Rs. 14,211 (1991) to Rs.35 lakhs (1980). Similarly the cuttlefish bones exported ranged from 900kg (1974) to 46.3 tons (1977). The value of cuttlefish bones exported varied from Rs.4548/- (1974) to Rs.4.7 lakhs (1982). France, Italy, Japan, Netherlands, Spain, U.K, USA & Hong Kong are the countries to which the seashells were exported. The major markets of our cuttlefish bones are U.K, USA and Germany.

The unit price of the seashells varied widely in the international market. One kilogram of seashells was exported for Rs.1.73 in 1969 to Rs.675.48 in 1993. In the meantime the cuttlefish bones were exported at the rate of Rs. 3.60 per kg in 1968 to Rs. 61.62 in 1997. The price of seashells were not steady as seen in Table-i. But the price of cuttlefish bones steadily increased (Table-2). The rate of seashells were less than Rs.80/kg all the time except in 1993 when the rate was extremely high, (Rs. 675.48) several times higher than the rest of the period. It may be due to the greater demand of the products in the international market or the rare and high quality seashells might have fetched the highest rate.

The quantity of the products exported fluctuated widely during the last 32 years. It may due to the fluctua-



Handicrafts made out of seashells

Styrofoam & Allied Products Pvt. Ltd.

Manufacturers of
Superior Quality THERMOFORMED Packagings such as

- Food Grade Disposable TRAYS in High Impact Polystyrene (HIPS) and Polyvinyl Chloride (PVC).
- Special TRAYS of various sizes for **FROZEN CHICKEN MEAT & FROZEN SEA-FOOD PACKAGING.**
- BLISTER PACKAGINGS.
- Packing TRAYS and POUCHES for DRAWING and WRITING INSTRUMENTS and ART MATERIALS.
- Pharmaceutical and Cosmetic packaging trays.
- Packing TRAYS for DIAMONDS and GEM STONES.

ON

HIGH SPEED AUTOMATIC VACUUM FORMING MACHINE

Regd. Office :
191/5316, Geetangali "A"
Pantnagar, Ghatkopar- East,
Mumbai-400 075.
Tel. : 022-516 51 12
Telefax : 022-516 20 12

Works :
Gala Nos. G1 & G2
Udyog Vihar Indl. Estate,
Vittalwadi - 421 003
Thane District
Tel. : 0251-557792
Telefax : 0251-545211

Contact Persons

Mr. R. Sreenivasan
Chairman & Managing Director
Tel.:(Resi.) : 022-5165112

Mr. R. Narayana Murthy
Executive Director
Tel.:(Resi.) : 0251-326624
Pager No. : 9628-215296

Table 1. The seashells exported during 1966 - 1997

Year	Quantity (Kg)	Value (Rs.)	Unit Price (Rs./Kg)
1966	4,570	80,144	17.54
1967	-	-	-
1968	1,518	14,923	9.83
1969	20,511	35,470	1.73
1970	5,363	29,683	5.54
1971	2,644	55,961	21.17
1972	48,096	1,60,921	3.34
1973	1,17,488	3,78,087	3.22
1974	69,854	2,47,772	3.55
1975	92,600	10,15,530	10.97
1976	54,642	6,29,573	11.52
1977	65,599	5,52,191	8.42
1978	1,50,687	21,77,620	14.45
1979	4,65,789	18,02,102	3.87
1980	4,93,354	34,95,114	7.08
1981	12,56,208	33,60,744	2.68
1982	82,130	9,81,317	11.95
1983	2,31,838	16,77,314	7.23
1984	28,660	8,89,389	31.03
1985	67,995	8,86,834	13.04
1986	14,934	1,49,513	10.01
1987	13,000	69,000	5.30
1988	-	-	-
1989	7,220	4,63,725	64.23
1990	-	-	-
1991	500	14,211	28.42
1992	4,16,878	6,27,938	1.51
1993	440	2,97,209	675.48
1994	83,476	11,26,422	13.49
1995	1,86,620	1,18,117,946	63.33
1996	7,44,556	5,71,95,817	76.92
1997	1,64,069	1,30,30,464	79.42

Source: Statistics of Marine Product Exports, 1966 to 1997.

tion in the demand for the products. It may also due to non availability of the materials to meet out the demand. However, there is great demand for the seashells and cuttlefish bones in the recent years. The demand of the seashells for lime industry and ornamental purposes in the local market is also considerable. But the seashells are not available in good quantity to meet the demand. The main reason for the poor availability of seashells in the seas is that, most of the bivalve and gastropods are destroyed in their early stages by the trawlers. Being demersal and sedentary or sluggish, they are much vulnerable to such destruction in addition to the natural process of predation by other animals. Another important factor to be considered is fishing of these molluscs in under size, i.e., they are caught before they sexually mature and spawn even once. In addition, the reproductive capacity of most gastropods are poor, i.e. they produce less number of eggs compared to other groups of animals. All these factors combine for the poor standing stock and their availability for fishing and export. If precaution is taken to prevent fishing under sized molluscs and prevention of trawling in their nursery grounds, it would certainly improve their production which will in turn help

Ornamental Seashells

SNOWMAN

THE COLD CHAIN COMPANY

COLD STORE

CITY COLD STORES AT THE FOLLOWING CITIES (inclusive storage capacity in Tonns)

- ◆ Chennai (1120)
- ◆ Delhi (1120)
- ◆ Pune (560)
- ◆ Bangalore (560)
- ◆ Phillaur (560)
- ◆ Vizag (560)
- ◆ Hyderabad(560)
- ◆ Cochin (816)

NEW COLD STORES COMMING UP AT

- ◆ Calcutta (1120)
- ◆ Mumbai (1120)

MAIN FEATURES OF OUR COLD STORE

- ➨ Environment friendly refrigerant gas.
- ➨ Strict temperature control monitoring.
- ➨ Freezer store temperature -25(C.
- ➨ Chilled store temperature +2(C.
- ➨ Fully racked storage system and forklift handling.
- ➨ Computer controlled inventory management System.
- ➨ First in First Out System (FIFO)
- ➨ Air locked truck docking system
- ➨ Strict hygiene standards.
- ➨ Fully power backup.
- ➨ Trained Man-power ensuring guaranteed safe storage.

TRANSPORTATION

MAIN FEATURES

- ➨ Point to point delivery
- ➨ Capacity options of 9T/ 10T/ 20T
- ➨ Networked communication system for Control and monitoring.
- ➨ Superior refrigeration system for cooling during transit.
- ➨ Presently 25 Reefer trucks having 10ft to 20 ft containers
- ➨ Trained drivers ensuring safety.
- ➨ All the trucks equiped with Data Loggers.

SNOWMAN EXPRESS

- ◆ Frozen shared cargo (between 500 kgs to 5000 kgs)
- ◆ Fixed rates on Kg basis (min 500 Kgs)
- ◆ Fixed schedule
- ◆ Cities covered (Presently Cochin, Coimbatore, Bangalore, Pune, Mumbai, Ahemdabad, Jaipur, Delhi, Hyderabad, Chennai, Goa)
- ◆ Future plan (Vizag, Bhuwaneshwar, Bhimavaram, Veraval etc.,)

SNOWMAN FROZEN FOODS LIMITED

#570, 5TH Main, 17th Cross, Indiranagar 2nd Stage, Bangalore - 560 038.
Tel. No. 080 - 5286706 / 5213252 / 5213497-8 Fax No. : 080 - 5274658
E-mail : Snowman.Bangalore-HLL@unilever.com

Table 2. The cuttlefish bones exported during 1966 - 1997

Year	Quantity (Kg)	Value (Rs.)	Unit Price (Rs./Kg)
1966	17,345	50,384	3.90
1967	2,507	25,783	10.28
1968	27,228	98,051	3.60
1969	10,693	73,730	6.88
1970	3,290	20,211	6.14
1971	13,222	53,674	4.06
1972	23,633	1,23,172	5.21
1973	45,642	4,04,944	8.87
1974	900	4,548	5.33
1975	8,846	50,976	5.76
1976	18,983	1,12,815	5.94
1977	46,264	2,99,280	6.47
1978	31,041	2,33,263	7.51
1979	30,107	2,38,665	7.93
1980	35,945	3,84,838	10.71
1981	28,581	3,86,881	13.54
1982	24,802	4,70,276	18.96
1983	25,986	3,43,588	13.22
1984	12,240	1,82,710	14.93
1985	2,837	58,621	20.66
1986	10,207	90,006	8.82
1987	35,000	4,97,000	14.20
1988	40,000	13,08,000	32.70
1989	5,564	1,02,960	18.50
1990	12,502	2,21,657	17.73
1991	1.362	44,298	32.52
1992	-	-	-
1993	3,575	1,31,245	36.71
1994	-	-	-
1995	4,903	2,64,896	54.03
1996	240	8,787	36.61
1997	12,140	7,48,069	61.62

Source: Statistics of Marine Product Exports, 1966 to 1997.

the seashell industry to flourish and earn more foreign exchange by way of export of seashells and to meet the domestic needs.

In the mean time the trend of the cuttlefish bone is different. The cephalopod molluscs such as squid and cuttlefish meat are exported in large quantities from India. There are large number of freezing plants processing cuttlefish and during the process large quantity of cuttlefish bones are got. They are not properly utilized in the local market or exported. Hence there is great scope for increase of the export of cuttlefish bones. The demand of cuttlefish bones in the international market can be explored and make use of the available cuttlefish bones of the processing plants for export.

In addition to the molluscan shells, crab shells, turtle shells and oyster shell powder are also being exported occasionally based on demand. The crab shells exported in 1996 was 4.6 tons which earned Rs. 12.45 lakhs. The turtle shell exported in 1997 was 22.5tons earning Rs.13.64 lakhs. Chitin, Chitosan are the products exported which are prepared out of crustacean shells. Preparing products out of seashells and cuttlefishes could increase the unit value of them. Handicrafts out of the seashells and cuttlefish bones may also have great demand and will fetch considerable foreign exchange. To enhance unit value of the seashells, the possibilities of exporting handicrafts out of them have to be explored.

Russian ship carrying 2,700 tons of frozen fish sinks

Ship started taking on water during trip from Sea of Okhotsk to South Korean port of Pusan

A Russian refrigerator ship whose crew was removed from the vessel has sunk off the southern coast of Japan, news reports.

The Avior, with a cargo of 2,700 tons of frozen fish, began taking on water as it was going from the Sea of Okhotsk to the South Korean port of Pusan, the ITAR-Tass news agency said.

The ship sent an SOS signal and the Japanese Coast Guard evacuated the 29 crew members and took them to the port of Hakodate on Hokkaido Island, the report said. None of the crew members was injured.

The ship sank despite efforts to tow it to Hakodate, the Interfax news agency said.

By Associated Press

Taste Sensations from our liquid assets

HIKARI SPECIAL

KODAMA

Great gourmet ideas from India. Wholesome. Hygienic. Succulent.

Try them. They will hold you in raptures!

HITU

GALAXSEA

SANDHYA MARINES LIMITED

32, pandurangapuram, visakhapattanam -530 003 india
tel: 561939, 565492 fax:91 _891 -567226
telex: 0495 - 599 usha in

A Case Study of Red Gill Syndrome on Broodstock in Shrimp Hatchery

Rubiyanto Widodo Haliman*

A case study was conducted from January 1999 to July 2001 to observe the red gill syndrome on shrimp broodstock. Up to now, there are few papers concerning this syndrome. Clinical sign, shrimp behaviour, and shrimp mortality were observed. Prevalence of red gill syndrome also determined for each production cycle. The results show that broodstock infected with this syndrome has a reddish gills and poor movement. Broodstock mortality was very heigh, up to 70% of total number of shrimp, lead to big loss. Therefore, more researches should be conducted to check this particular syndrome.

Introduction

Shrimp is widely cultured in Asia and has become a major industry in several countries, including Indonesia. Among the species that were cultured in Indonesia, tiger shrimp (*Penaeus monodon*) is the predominant.

Shrimp postlarvae (PL) can be collected from the nature. However, this method is time consuming and mostly PLs are irregular in size. To solve this problem, many hatcheries were established, producing PLs to supply the need. Hatchery-reared PLs are more uniform in size and are available throughout the year.

Recently, hatchery operators in Indonesia, especially in East Java province, face a serious problem with broodstock. Mortalities were observed before the eye stalk ablation was conducted, leading to high loss of broodstocks and affecting the nauplii production.

Observations on this syndrome have been done since January 1991 to July 2001. Affected broodstocks showed similar symptom; reddening of the gill and body, called as Red Gill Syndrome (RGS), firstly observed at PT. Tirtamutiara Makmur, a private shrimp hatchery in Besuki, Situbondo, East Java province.

Shrimp is widely cultured in Asia and has become a major industry in several countries, including Indonesia. Among the species that were cultured in Indonesia, tiger shrimp is the predominant.

Broodstock maintenance condition

Broodstock were obtained from different region in Indonesia. In the hatchery, there are six production cycles in a year and each cycle takes broodstocks from one particular area. Following are the choice regions as source of broodstock: Jabung, Puger, Madura and Prigi (all in Java Island), Balikpapan in Kalimantan, and Aceh in Sumatera. Upon arrival in the hatchery, broodstocks were maintained in 8-ton concrete tanks with twice daily water exchange, 50% respectively. Shrimps were fed four times a day with fresh squid, oyster, clam, and crab, with each food given for one meal. Tanks were equipped with aeration and electric water heater in order to maintain temperature at 30°C.

Treatment also had been given daily, mostly antibacterial agents were used such as Furazolidome and Erythromycin, 4 ppm respectively. Probiotic bacteria of Rhodobacter sp. was also applicated at 100 ppm. Water quality parameters also were checked based on three-day interval. Affected shrimps were sent to Gondol Research Institute for Mariculture, Bali, subject to PCR-test.

Observation Result and Discussion

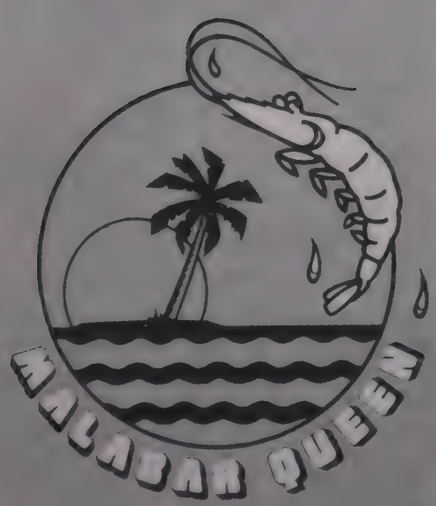
After arrived in the hatchery, broodstocks were selected to obtain good shrimp, and acclimatized for several days before ablation was conducted. Those seemed to be suffered from RGS, characterized by reddish gill and body, would be rejected. Several broodstock demonstrated RGS one or two days after arrival, but mostly died due to RGS one or two days after ablation. Clinical signs included fouling of gills with reddish colour extending to their bodies and loss of appetite. Affected shrimp stayed in the tank bottom and gave no response if they were touched. Within two days after

'Malabar Queen' the ultimate

in quality, freshness and succulence. Tropical Marine Products with guaranteed quality from the sunkissed waters of the Indian Ocean. A wide array of seafood - raw, blanched, cooked - as IQF in consumer/bulk packs. Opening up myriad avenues of culinary delights.

Processed in the ultra modern seafood factory of Integrated Rubian Exports Ltd. Using the latest state-of-the-art technology, adhering to stringent hygiene requirements.

Integrated Rubian Exports Ltd., - an ultra modern seafood processing unit with all round supremacy in Quality. In Technology. In Management. In Efficiency.



Integrated Rubian Exports Ltd.

AROOR - 688 534 KERALA,INDIA.
PHONE: (91-47887) 2718, 2719 Fax: 91-478-872306
TELEX: 885-6679 PEARL IN.

first clinical sign was detected, the prevalence could be 100%, although in some other cycles the mortality were not significant.

Once RGS infection was detected, the suffered ones should be separated from those healthy ones, in order to prevent them from this communicable disease. No treatment was effective as therapeutic agent caused high shrimp mortality. Table 1 shows mortality number of broodstock suffering from RGS. Prevalence counted as the number of RGS infected shrimp compared to the total number of shrimp, in percent.

Although the prevalence is not same for each cycle, it can be said that once RGS appear, the mortality may be very high. RGS infects the broodstock both in dry season (April to October in Indonesia) as well as in rainy season (October to April), so there is no specific season or period for this syndrome. RGS infected broodstock can be found from all of source region in Indonesia, also indicate no specific region that is free of RGS, except those from Madura, where only one batch of data was obtained.

PCR-test showed that affected shrimps were infected by White Spot Syndrome (WSS) virus. Yuasa et al. (2001) recently reported that broodstock management encountered frequently mass mortalities, and concluded the causative agent was WSS virus. Furthermore, Koesharyani et al. (2001) found that PCR examination detected WSS virus from stomach, lymphoid organ, and pleopods of RGS infected shrimps, thus indicating RGS was associated to WSS. Lightner (1996) wrote that WSS also known as Systemic Ectodermal and Mesodermal Baculovirus (SEMBV) or White Spot Baculo Virus (WSBV). Meanwhile in Thailand, Kasornchandra et al. (1996) suggested that the bacilliform virus is responsible for serious mortality in cultured shrimp, which had reddish to pinkish red discolouration of the body. Shrimp age of 40 to 75 days old were the most victims, and mortality could reach 100%, where as Lightner (1996) found in that many cases, moribund shrimp with WSS virus display a pink to reddish brown coloration, and mortality reach 100% within three to ten days of the onset of clinical signs. It seems that RGS can attack juvenile as well as broodstock.

The causative agent might have been infected broodstock while they are still in the sea, and stress condition during transportation to hatchery made broodstock weak (Koesharyani et al., 2001). This unadvantage condition can stimulate the initial stage of RGS.

Table 1. Mortality number of broodstock affected with RGS

Production cycle/period	Total number of broodstock	Mortality	Source area/region	Prevalence (%)
Feb-Mar 1999	59	59	Puger	100
Apr-May 1999	42	-	Madura	0
May-July 1999	64	-	Puger	0
July-Sept 1999	49	-	Jabung	0
Sept-Nov 1999	107	64	Jabung	59.8
Nov-Dec 1999	71	71	Balikpapan	100
Jan-Mar 2000	50	2	Puger	4
Mar-Apr 2000	68	-	Jabung	0
May-Jun 2000	105	73	Jabung	69.5
Jul-Sept 2000	121	108	Puger	89.3
Sept-Oct 2000	45	40	Prigi	88.9
Jan-Feb 2001	73	73	Aceh	100
Mar-Apr 2001	79	-	Jabung	0
Apr-Jan 2001	88	-	Puger	0
Jun-Jul 2001	95	80	Jabung	84.2

Table2. Result of water quality examination

Parameters	Result
Temperature (°C)	30
pH	8.1 – 8.2
Total alkalinity (ppm)	80 – 100
Total organic matter (ppm)	16.43 – 29.07
Ammonium (ppm)	0
Nitrite (ppm)	0.05

Result of water quality parameters examination is shown in Table 2. The water quality was good for maintaining broodstock, suggested that the syndrome was not caused by water quality problem.

Since RGS caused high mortality and big loss to hatcheries, more researches should be done to get more informations regarding this syndrome, especially the prophylactic methods.

Conclusion

RGS cause high mortality of broodstock in shrimp hatchery, and this disease is considered to have a relationship with WSS virus. Further study should be conducted to determine the best method to prevent this particular syndrome. PCR test should be done to select RGS-free broodstock.

Acknowledgement

The author would like to thank Dr. Celia R. Lavilla of SEAFDEC, the Philippines for reviewing the manuscript.

** Pt. Tirtamutiara Makmur*
P.O. Box 14, Besuki-Situbondo
68356, Indonesia

This paper was presented during 'Shrimp 2001' at Chennai

WATER ANALYSIS

AS PER
EEC REGULATION 80/778/EEC
AND
IS 4251 SPECIFICATION
FROM

GEO-CHEM LABORATORIES (P) LTD.,

APPROVED BY
EXPORT INSPECTION COUNCIL OF INDIA, NEW DELHI, VIDE
LETTER NO. EIC/D (QC)/T-44/2001/4915 DATED 09.08.2001

GEO-CHEM LABORATORIES (P) LTD.,
Jaison Building, CC 24/172
Plot No. 77, Near Perumanoor Jetty,
Willingdon Island, Cochin – 682 003
Tel: 0484-669761/667158
Fax: 0484-667158
E-mail: geochemkochi@satyam.net.in

TEST CERTIFICATE WILL BE ISSUED AT COCHIN WITHIN 10/15 DAYS

Regd. Office
Geo-Chem House
294 Shahid Bhagat Singh Road,
Fort Mumbai – 400 001
Tel: 269 5542, 269 3153, 269 7817
269 7709
Fax: 91-22-2695545, 2642046
E-mail: geochem@mantraonline.com
Telex: 11-83498 GEOC IN

Central Laboratory
36/37, Raja Industrial Estate,
1st Floor, Purushottam Kheraj Marg, Mulund (West),
Mumbai – 400 080
Tel: 569 0611, 567 6495,564 2021
Fax: 022 567 0325
E-mail: geochemmld@mantraonline.com.

Chennai Branch
240, Thambu Chetty Street
First Floor,
Chennai- 600 001
Tel:5211325, 5213133, 5234558
Fax: 044-5267082
E-mail: geochem@eth.net

Jamnagar Branch
"VENUS APARTMENT"
FAX: (91 - 288) 550812
201/203, 2ND FLOOR,
OPP: CRICKET BUNGLOW,
JAMNAGAR - 361 001
TEL: 550811, 554005, 554389
FAX: 288 - 550812

Kandla Branch
B-53, Shaktinagar,
Opp. Shaktinagar Shopping Centre,
Gandhidham [Kutch]
Gujarat - 370 201.
Tel.: (2836) 23049 / 35395
Fax: +91 2836 32639
E:mail: geochem@winetonline.com

Kakinada Branch
Geo-Chem House, 45/7/19.
Gudimetlavari Street,
Jagannaickpur,
Kakinada - 533 002 (A. P.)
Tel: **884 374301**
Fax: 884 341730
Tlx: 473-265 GCKD IN
E-MAILgeochem_kkd@sol.net.in

Kolkata Branch
New Alipore Market Complex
Block 'M" Phase 1, 4th Floor,
Room No. 41, P.O. New Alipore,
Calcutta – 700 053
Tel: 4004351, 400 4324
Fax: 033-400 4851
E-mail: pccca@cal2.vsnl.net.in

Mangalore Branch
A-1 vyas Nagar Behind K.P.T.
Bejai Post, Mangalore – 575 004,
Tel: 824-213411

Tuticorin Branch
4/183,
C.G.E. Colony, Tuticorin- 628 003
Tel: 0461-338674

Visakhapatnam Branch
17-18, Lakshmi Castles
Opp. Hindu Reading Room
Visakhapatnam – 530 001
Tel: 891-525534
Fax:891-565826

OTHER BRANCHES: BANGALORE, BELLARY, GOA, INDORE, NEW DELHI, RAJKOT

ASSOCIATES: WORLDWIDE

"Trends in Shrimp Aquaculture in India with Specific Reference to Andhra Pradesh"

M. SUDARSHAN SWAMY
President
ANDHRA PRADESH SHRIMP HATCHERIES ASSOCIATION

Introduction

In India, brackishwater farming is an age old practice. Presently, brackishwater aquaculture is restricted to shrimp farming because of high export realization of penaeid shrimps. The early 1990's had witnessed a huge jump in the development of Shrimp farming and in mid 1990s shrimp farming sector encountered problems due to disease outbreaks and later due to objections from some environmental activities.

Since aquculture is a complex activity, this paper focuses mainly on Monodon shrimp culture and an in-depth view of the Monodon shrimp hatcheries which have been the root cause for the growth of this sector especially in the state of Andhra Pradesh. It also focuses on the problems being faced along with possible solutions to face the current world scenario.

In conclusion we show the growth chart for the Black Tiger Shrimp with an objective to double the production without much additional investment. Also the need for emphasis on planning and the importance of Research and Development within the country.

GROWTH OF SHRIMP AQUACULTURE SECTOR IN INDIA

Shrimp aquaculture has been practiced in India for centuries on a traditional manner in certain coastal states, but made its presence felt by contributing to the socio-economic development of the country only in recent years. In traditional brackish water farming the production of shrimp was ranging from 100-150 kgs per hectare per year. Until 1980, traditional type of aquaculture, which was practiced in about 50000 hectares of area in four maritime states of India, (i.e.) West Bengal, Kerala, Goa & Karnataka was contributing to about 7000-10000 tons of shrimp annually.

Availability of vast tracts of coastal saline lands coupled with abundant quantity of wild seeds and strong demand for shrimp were initially responsible for attracting the entrepreneurs towards shrimp farming and its expansion. Hundred of hectares of land were brought under extensive type of farming during the period from 1980 to 1990.

With the successful development of hatchery technology in the late 1980s and the opening up of the economy in the beginning of 1990s, saw an aggressive expansion of shrimp aquaculture

Table 1. Details of area and production and average yield in Shrimp farming in India from 1991-92 to 2000-01

Year	Area (In ha)	Production (in (MT)	Average Yield(kg/ha)
1991-92	68227	40000	586
1992-93	70700	47000	665
1993-94	82540	62000	751
1994-95	100700	82850	823
1995-96	118983	70573	593
1996-97	135582	70686	521
1997-98	141591	66868	472
1998-99	135617	82634	609
1999-00	148845	86000	547
2000-01	156270	97100	621

SENATOR LINES GmbH

(ROUND THE WORLD CONTAINER SERVICE)

YOUR PARTNER FOR GLOBAL CONTAINER TRANSPORT

Accepting **REEFER** Cargo

From

COCHIN & CHENNAI

To

JAPAN & FAR EAST, CHINA, SOUTH EAST ASIA, MIDDLE EAST ASIA, EUROPE, NORTH CONTINENT, UK/EIRE & USA PORTS

Service Highlights

Ample Stock of 20' & 40' Highcube New Boxes.

Fixed Day Weekly Schedule from Colombo. Thrice Weekly Feedering from Cochin to Colombo. Competitive Freight Rates & Transit time.

For Further Details Kindly Contact:

OSA SHIPPING PVT. LTD.
Cochin Chamber Annexe
Bristow Road, P.B. No. 582
W/Island, Cochin - 682 003.

Tel : 666585, 666308, 666844, 666664
Fax : 668353
E-Mail : kdmadan@vsnl.com

in the country. Thousands of hectares of coastal lands were converted into shrimp farming. Several hatcheries and feed mills were set up to supply the seed and feed respectively for farming operations. Hundreds of establishments were set up for supplying other inputs and services. Consequently shrimp farming area increased rapidly from 68.227 hectares in 1991-92 to 1,56,270 hectares in 2000-01. Correspondingly, production of shrimp too rose from 40,000 tons to 97,100 tons during the same period (Table 1).

India is utilizing only about 13% of the available potential land for aqua farming. Even now, it is estimated that about 50.000 hectares area is under traditional or improved traditional method of aquaculture and the rest either extensive or semi extensive system.

Realizing the fact that shrimps can also be grown in low saline / freshwater conditions, large number of farmers are culturing shrimps in such system in recent years. In the state of Andhra Pradesh alone about 15,000 MT of shrimp is produced through such a system covering an area of 16,660 ha.

The average yield of shrimp per hectare in India through aquaculture is also less than 1 metric ton and much below when compared to several other countries in South East Asia. The total investment made in shrimp aquaculture in the country is estimated to be worth over US$ 2000 million presently and therefore India is still considered as an infant and a sleeping giant, which is having vast investment potential and opportunities in aquaculture.

In the state of Andhra Pradesh, which has a potential of 1.50.000 ha currently the area under culture is 74.227 ha apart from 16.660 ha in low saline areas. It has the highest area under culture in India with a production of 51.055 MT out the total production of 97,100 mt (2000-01) (i.e) 53%.

Shrimp aquaculture sector faced severe set back since 1995. Out-break of diseases in shrimp farms caused heavy mortality of shrimp and financial losses to farmers. One out of two crops invariably affected by disease every year. The annual loss of production due to disease is estimated to be 12,000 to 15,000 MT valuing at US $ 87 to 100 million. Brackishwater shrimp farming also beset with the issue related to the public interest litigation filed in the Supreme Court and the consequent verdict delivered by the court, which has virtually halted the development of shrimp farming. Even though, some of the provisions of the original verdict were stayed subsequently, the sector could not recover fully since then.

Trends in Development of Shrimp (Monodon) Hatcheries in India

Commercial shrimp hatchery evolved from the year 1993 due to vast shortage of seed as the demand increased drastically. With the establishment of commercial hatcheries the natural seed collection decreased and the shrimp export got the real thrust.

Today, due to establishment of hatcheries the aquaculture shrimp exports increased from US$200 Million 1991 to US$803 Million (53% of total seafood export) in 2001. Thus hatcheries played a vital role in the shrimp economy.

The first two hatcheries were built in the year 1988 by the Government of India where by MPEDA setup facilities and imported the technology from USA & France. That gave a major boost to the aquaculture industry and of course to the hatchery technology also.

There are over 283 shrimp hatcheries along the coastline of the country with a production capacity of 13,882

Progress in Establishment of Shrimp Hatcheries in India

Year	No. of hatcheries	Installed capacity in Million seeds/annum
1989-90	13	200
1991-92	16	400
1993-94	36	2,160
1995-96	128	5,120
1997-98	250	11,600
1999-00	260	12,500
2000-21	283	13,882

Million nos.of post larvae. Of these hatcheries nearly 60 % (180 nos.) are located in Andhra Pradesh accounting for 65% of the total national PL production capacity (7500 million PL per annum). Next to Andhra Pradesh, Tamilnadu has 72 hatcheries with capacity to produce 2900 millions of PL / annum.

II. Technology:

Firstly , the technology adopted initially was the Galveston (American) Method where by at PL 3 stage they are transferred to another tank and reared upto PL 20 or till they are sold. This method is common as the first hatchery established by MPEDA imported this Technology from USA . The treated water exchange is done frequently.

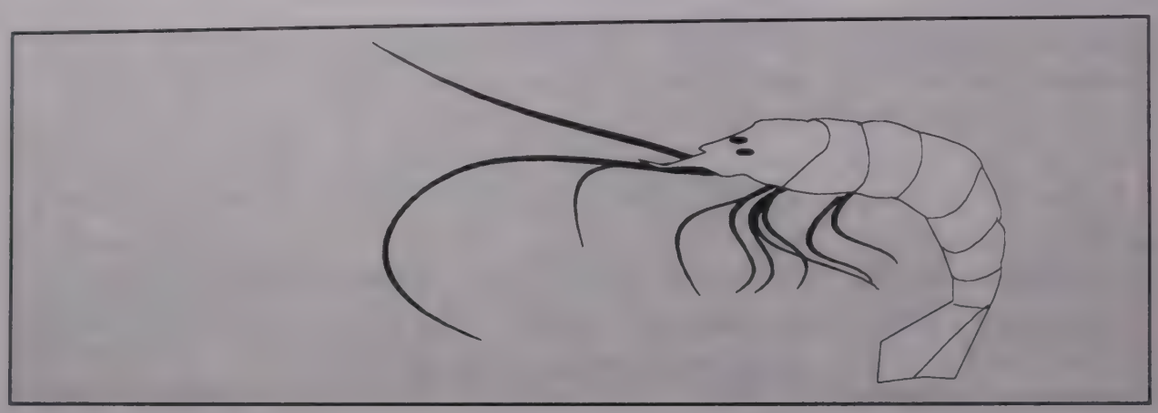
The second method used is the Taiwanese system – where by once the naupli is stocked it is left in the same tank till it is sold using minimal water exchange.

Currently, most hatcheries have evolved systems to suit their requirement and in many cases use a combination of these two technologies.

III Brood Stock:

The collection of tiger brooders from the sea is an arduous, risky and

Our Secret Recipe for Quality



A Government of India recognised export house since 1988, today our brands like Akasaka, Nekkanti, Roppongi, Akasaka Special and Nekkanti Star. are well established in the Global Markets. Our Products range presents a varied menu for discerning buyers as shrimp, lobsters, cuttle fish, squid, crabs, king/fin fish, pomfret and snappers. Our exports to countries such as Japan, U.S.A., Australia, Singapore, Belgium, Spain, Malaysia, Italy and Netherlands have helped us achieve a phenomenal growth. It isn't a surprise that we have been awarded the best exporter award many a time.

NEKKANTI SEA FOODS LIMITED

(A Government of India Recognised Export House)

Flat No. 1, Jayaprada Apartments, Nowroji Road,
Maharanipeta, Vishakapatnam-530 002, A.P., India
Tel: 567767, 571039. Fax: 91 0891 567504

expertise and experience

No. of Hatcheries & Production Capacity

Locations - State/ District	Number	Production Capacity(millions)
1. Andhra Pradesh	180	10,065
*1) Nellore District	50	
2) Guntur & Bapatla Districts	10	
3) Prakasham District	13	
*4) East Godavari District	65	
5) Visakhapatnam District	30	
6) Vizianagaram District	11	
7) Srikakulam District	1	
2. Tamil Nadu & Pondicherry	72	2,933
3. Orissa	9	445
4. Karnataka	9	240
5. Maharashtra	2	51
6. Gujarat	1	48
7. Kerala	10	100
(* Includes new hatcheries under construction)	283	13,882

expensive task. The 283 shrimp hatcheries are forced to vie with each other to secure brood stock collected from the sea. This competition has the effect of pushing up the cost of a spawner / brooder to a level of Rs. 50,000 (US$1000) or even more sometimes. Brooders are harvested and supplied by a separate set of operators. Further, the detection of white spot virus at the hatcheries or larval of post larval stages with certainty before delivery of PLs to farmers has become a major problem. Taking advantage of this predicament and to the relief of the hatchery owners, a few enterprises have set up naupli production centres. Now most of the hatcheries depend for naupli supplies on these centres instead of buying spawners / brooders and passing through the ordeal of ablating them and subjecting themselves to all the associated follow – up measures thereafter.

The Naupli centres produce Naupli from two sources. The Maturation (ablation) method accounts for 25 % of the total Naupli production and the rest 75 % is obtanied from Spawners (wild) source.

The Total Naupli requried for 7000 Million seed is produced from 100.000 spawners which includes mortality. The 100,000 spawners are obtained from the following landing centres in the %'s shown.

V. Feeds

Artemia continues to be the main cost of feed at the hatcheries for PL Production, other supplementary feeds are also used which is mainly imported.

The total consumption of Artemia is 50tons / Annum valued at Rs.200 Million (US$ 4 Million). The consumption of supplementary feeds is about 30tons valued at Rs.55 Million (US$ 1.10 Million).

Comparative Statement of Customs Duty on Artemia

1	Bangladesh	00.00%
2.	Malaysia	00.00%
3.	Japan	02.00%
4.	Korea	05.00%
5.	Thailand	06.00%
6.	Vietnam	08.00%
7.	India	40.00%

The Customs duty levied on Artemia in India is the highest in the world.

VI. Disease Problems:

1. Bacterial :-

Mass Mortalities due to Luminous Vibrio harveyi have been reported to occur in sea water, which is drawn by hatcheries. Apart from sea water, other sources of luminous vibrios include fecal matter and exoskeleton of spawners and Artemia hatching water.

2. Viral Diseases :-

a) At least 14 viruses have been reported from penaid shrimp, of these Monodon Baculovirus (MBV) have been reported to cause mass mortality in hatcheries in India . It is generally accepted that though MBV is highly prevalent in southeast Asia, it is not highly virulent.

Generally mixed infections, involving MBV and other viral or bacterial pathogens have been responsible for motalities.

b) On the other hand, the problem due to White Spot Syndrome Virus (WSSV) is more serious in India and South Asia. This virus affects all ages of shrimp and within a few days the mortality can rapidly reach upto 100%. This virus affects tissues of ectodermal and mesodermal origin.

VII. Diagonistic Laboratories:

In the recent past, there is more awareness among farmers to select the seed based on quality. Therefore the farmers and nursery owners are testing for diseases as well for quality. The

Skillfully tapping the global export potential of marine products.

Alsa Marine and Harvest Limited

Capitalising on India's marine resources and doing it expertly.

That's Alsa Marine and Harvests Ltd. A dynamic enterprise involved in winning the wealth of the seas for India and the export market, Alsa has already established a strong market base in USA, Europe and the Far East.

With a booming market in seafood across the globe, Alsa Marine has responded suitably with collaborations and joint ventures.

Alsa Marine has state of the art cooking and freezing plants at Calcutta and Vizag and the plant at Chennai will be ready in six months. Leased plants at Bhubaneswar, Chennai and Cochin have also been upgraded. Alsa is on a list of USFDA and two of its factories are approved for EEC.

Equipped with state of the art facilities and a trained workforce, Alsa is poised to rapidly forge ahead into the future through a forceful expansion cum modernisation drive, at home and abroad. Alsa is recognised as a Trading House and is geared to attain Star Trading House status in the coming years.

Alsa Marine manages a 120 acre farm in Nellore, and is also an active participant in satellite farming. With a tie up with Biofeed Singapore, Alsa has brought in quality feed to the small and big farmers. Alsa Marine provides technology for different levels of culture activities; from the semi-intensive to extensive. Alsa Marine assists farmers in setting up of farms, right from selection of site to commercial operations and provides farm management assistance.

All of which will see Alsa netting more profits and precious foreign exchange from the seas.

ALSA MARINE AND HARVEST LIMITED
AF- 54, 11th Main Road, Anna Nagar, Madras- 600 040, India.
Tel: +91-44-6212937/938/944 Tlx: 041-5272 ALSA IN
Fax: +91-44-6212945/6539

BRINGING ASHORE THE PROSPERITY OF THE SEAS.

Sources of wild Brood stock /Spawners is normally from East Coast of India

	Brood stock landing Centres States/Cities		Total % landing
I.	**Orissa State**		20%
a)	Gopalpur		
b)	Puri		
c)	Paradeep		
II.	**Andhra Pradesh State**		50%
a)	Nellore	g)	Bhairav palem
b)	Kakinada	h)	Ongole
c)	Visakhapatnam	i)	Bapatla
d)	Srikakulam	j)	Machlipatnam
e)	Kalingapatnam	k)	Nizampatnam
f)	Kaveti	l)	Antharvedi
III.	**Tamil Nadu State**		28%
a)	Kanyakumari	e)	Palayar
b)	Tuticorin	f)	Cuddolore
c)	Rameshwaram	g)	Pondicherry
d)	Nagapatnam	h)	Chennai
IV.	**Kerala State**		2 %
a)	Quillon		
b)	Kochi		

IV. The following are the locations and % of the total production of the Naupli Centres, in the country.

Location (State / City)		**% of total Naupli Producation**
I	**Orissa**	15 %
a)	Gopalpur	
b)	Puri	
c)	Konark	
II	**Andhra Pradesh**	60 %
a)	Visakhapatnam	
b)	Kakinada	
c)	Bapatla	
d)	Ongole	
e)	Nellore	
III	**Tamil Nadu**	25 %
a)	Chennai	
b)	Pondicherry	
c)	Chidambaram	
d)	Rameshwaram	

farmers are also testing water quality, soil and grow out pond shrimp during culture at the following centres. Currently, the government is encouraging hatcheries to set up Inhouse labs to improve quality. The following are the location of 20 Labs in the country.

Note: Currently there are over 29 hatcheries who have already registered with MPEDA to establish Inhouse Labs. MPEDA to encourage hatchery owners to establish PCR Labs has a scheme to subsidize the Lab equipment cost by 50% (i.e.) upto Rs.500,000 / US$ 10,000.

Problems and possible solution for Shrimp Culture – (Sustainable Aquaculture)

1. Broodstock: More than aquaculture the fear is of Virus and Bacteria. The root cause of the problem is Broodstock.

a) Broodstock is being collected from the ocean in a haphazard manner resulting in stress to the animal thereby affecting the quality.

Specialized boat with good facilities to handle brood stock at sea and during transport should be developed and the fisherman should be trained specifically to collect Broodstock.

b) The broodstock quality can be improved and there are 2 ways to control the current problem.

i) For the immediate future there should a program to implement effective Sea Ranching and should ensure that quality/tested seed is released by hatcheries into the ocean at a suitable location on yearly basis with immediate effect with government assistance and regulation. It is imperative for hatcheries to cooperate for their own and the industry's survival. Sea Ranching improves the quality of available wild broodstock and further healthy broodstock can be obtained.

ii) The second important decision is to invest in SPF (Specific Pathogen Free)/Domestication technology of broodstock. It is imperative that a decision to invest in SPF project must be taken up by the Government or through a consortium of private investment along with government, if the shrimp culture has to be sustainable.

2. The Cost of Artemia is very high, the duty rate should be reduced with immediate effect to enable hatcheries to use artermia liberally and sell quality seed at remunerative price. The cost of production has increased due to high duty on Artermia. Efforts of R & D should be a high priority to culture Artemia in India as well as to develop

INTERGOLD

THE STAR PERFORMER CONTINUES TO SPARKLE
BONDING STRONG RELATIONS
AND
SATISFIED CUSTOMERS ACROSS
USA, UK, EUROPE, AFRICA, JAPAN,
FAR EAST AND THE MIDDLE EAST.

for trade enquiries:

Interseas

10/763 A, CHANDIROOR - 688547
ALLEPPEY DIST.
KERALA, INDIA
Tel : (0) 478-872288 / 873388 / 873288
Fax : (0) 478-873362
e-mail : interseas@eth.net

Location (State / City)		No. of Labs	Operated By
A)	ORISSA	1	MPEDA
B)	ANDHRA PRADESH:		
1)	Nellore	2	MPEDA / Private
2)	Ongole	1	Private
3)	Vijayawada	1	MPEDA
4)	Bhimavaram	1	MPEDA
5)	Kakinada	2	Dept. of Fisheries / Private
6)	Visakhapatnam	1	MPEDA
7)	In-house labs	4	Labs attached to hatcheries
C)	TAMIL NADU:		
1)	Chennai	3	Private
2)	In-house labs	2	Labs attached to hatcheries
D)	KARNATAKA:		
1)	Managalore	1	University
2)	In-house lab	1	Lab attached to hatchery

a suitable alternative.

3. Poor Quality of Naupli: Broodstock especially during the low temperature season (i.e) December to February which is also the peak season, the quality varies. Due to high cost of brooders / spawners the Naupli centres continue to supply variable quality. Therefore standards have to maintained for supply of good quality Naupli consistently.

4. Quality of Seed/Code of Practices: All hatcheries should implement the code of practices established together by AP Shrimp Hatcheries Association and MPEDA to maintain standards in the hatcheries. Hatcheries should monitor the quality by establishing Inhouse PCR Labs. Self-regulation and discipline is essential as this will result in supply of better quality of seed.

5. Sustainable Price: The price of shrimp seed varies from Rs.50,000 to 500,000 (US$1000 to $10000) Per/ Million. If production is controlled by hatcheries especially during off season (i.e.) April to May and September to October months (as the capacities is much higher than demand) then remunerative prices can be achieved on year round basis, which will result in hatcheries to maintain the quality of seed.

6. Nursery Rearing Centre: In AP especially there is a vast fresh water area under Mondon Shrimp Culture and it is reared in 0-5 PPT. For acclimatization of the hatchery seed, the nursery rearing centres buy seed from hatcheries and over a period of 7 to 10 days reduce the salinity to 0 ppt. These centres need to maintain proper standards like water quality, depth of the pond and stocking densities so as to supply quality seeds to the local farmers.

7. Water Effluent treatment: All Farms and Hatcheries should ensure that the effluent water discharged is treated and let out into the open water bodies. MPEDA has a subsidy scheme for farms to establish ETP. The same should be extended to hatcheries along with effective ETP design.

8. Shrimp Health Centre:

a) These centres should be established at various locations in the farming areas as a service to the farmers.

The centre should provide the facility to test.

1) Water Quality 2) Soil 3) Seed Quality 4) Feed Quality 5) Disease Diagnosis

This will also promote eco-friendly aquaculture and disease free shrimp farming.

These Centres can be attached to Government Research Institutes or Universities which provide such courses.

9. Research & Development: The research carried out by varies government agencies do not always come in handy for the industry. There has to be a consortium between Universities, Research Departments and the Aquaculture Industry to collaborate and develop R & D on prioritized areas like Broodstock, Health Management etc. through participatory interactions This has to be done at the national level.

10. Planning: As the aquaculture is playing vital role in the seafood exports the planning should be carried out by the industry as an integrated group (i.e) the processors & exporters, farmers, hatchery owners, feed mills, and boat owners (brood stock).

The enhanced group should formulate the need of the industry in the short and long term and the direction it has to take.

The exporters are exposed to the international scenario and based on the need, a strategy can be evolved. Once the strategy is formed, then as a group the government can be approached for their assistance in R&D and regulation. The aquaculture group becomes worth over US$800 Million today and it is expected to the double in another 2-3 years. As a Net Exporter (i.e) (export value – import for exports) the seafood

With
best compliments from

Leading the way to success with rare quality of value added seafood

PROCESS INNOVATION

DIVERSE PRODUCTS

WIDE VARIETIES

WAVES BRAND

JINNY MARINE TRADERS
1306/1311 GIDC Estate, Veraval - 362 269 Gujarat, India.
Tel : 91 - 2876- (O)41786/23905, (F)42390/42781
Fax :91- 2876 - 41787/41785 Tlx : 163 -215 HIMA IN

industry sector contribution is one of the highest in this country.

11. Due recognition for the Aquaculture sector

Currently the Aquaculture sector is under the shadow of the Ministry of Agriculture despite its huge potential for export development. The aquaculture Authority of India setup under the Ministry of Agriculture should play an active role to promote aquaculture.

Conclusion

It is evident from the details mentioned that by improved planning and with effective implementation, the aquaculture sector can grow by atleast 100% (i.e.) 200.000 tons production, enhancing the revenue from current Black Tiger of Rs.3870 Cr. / US$ 803 Million to 7680 Cr. or 1.60 Billion US$ taking the overall Seafood Exports from 6400 Cr. / US$ 1.4 Billion to 10,240 Cr. or US$ 2.20 Billion.

This growth can be achieved with minimal or no additional investment in this sector. The required quality of seed can be produced by the existing hatcheries (excess) capacity. Farms have to increase their productivity from 700 Kgs to 1200 Kgs which is still considered extensive culture.

For the supply of quality seeds it is imperative to establish SPF/Domestication Broodstock in the long term. At the same time sea ranching should also be practised to enhance the production of wild Shrimp for the short term.

There is an immediate need to reduce the Cost of Production, firstly this can be achieved if seed cost is brought down which is possible only if duty on Artemia import is abolished, secondly, the farm feed prices should be brought down to enable the farmers to reduce overall cost of production. This will help the Indian Black Tiger to be more competitive in the World Market as it is vital in the current international scenario.

(Source of details & statistics – MPEDA)

State-wise details of Shrimp Farming in India from 1991-92 to 2000 - 2001

State	Estimated Potential * Area (ha)*		1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-2001
West Bengal	4,05,000	A	33,918	34,050	34,150	34,400	34,660	42,605	42,525	45,067	41,980	45,890
		P	13,800	16,300	16,500	28,000	23,445	19,949	15,121	18,320	21,780	22,004
Orissa	31,600	A	7,417	7,760	8,150	8,500	11,000	11,332	11,332	8,000	9,000	10,523
		P	3,800	4,300	3,300	4,800	6,000	6,808	5,000	6,000	3,400	7,660
Andhra Pradesh	1,50,000	A	8,100	9,500	19,500	34,500	50,000	60,249	66,290	66,249	76,128	74,227
		P	9,700	12,800	26,000	34,000	27,140	30,577	34,075	44,856	41,655	51,055
Tamil Nadu	56,000	A	480	530	1,050	2,000	2,879	640	670	1,100	1,882	2,596
		P	700	1,100	2,000	3,000	1,092	1,129	1,197	1,847	2,940	3,873
Pondicherry	800	A	Neg.	Neg.	Neg.	Neg.	37	22	22	Neg.	Neg.	Neg.
		P	Neg.	Neg.	Neg.	Neg.	10	27	20	Neg.	Neg.	Neg.
Kerala	65,000	A	13,145	13,400	13,860	14,100	14,657	14,658	14,595	13,180	14,470	15,495
		P	9,500	9,750	11,500	12,000	9,000	8,225	7,290	7,660	7,150	7,666
Karnataka	8,000	A	2,542	2,570	2,600	3,500	3,500	3,500	3,540	3,140	3,635	3,119
		P	1,100	1,150	1,500	2,500	2,050	2,300	2,640	2,690	2,890	2,823
Goa	18,500	A	525	550	575	600	650	650	650	600	770	929
		P	300	350	400	450	550	580	590	590	840	966
Maharashtra	80,000	A	1,869	1,980	2,180	2,400	716	929	970	426	533	1,114
		P	930	1,050	300	400	740	700	700	409	390	385
Gujarat	3,76,000	A	231	360	475	700	884	997	997	315	447	2,377
		P	170	200	500	700	546	572	235	256	340	668
Total	11,90,900	A	68,227	70,700	82,540	100,700	118,946	135,560	141,569	138,077	148,845	156,270
		P	40,000	47,000	62,000	85,850	70,563	70,840	66,848	82,628	81,385	97,100

(Source- MPEDA)

(I) A : Area under Culture in ha P : Estimated Production in MT (II) Average Production / ha (00-01) - 621 kg /ha

(III) Area under utilization - 13.12 %

With Best Compliments from

BARAKA OVERSEAS TRADERS

POST BOX NO. 1204, ULLAL - 574 159, MANGALORE, INDIA

PROCESSING AND EXPORTERS OF FROZEN MARINE PRODUCTS

GOVERNMENT RECOGNISED TRADING HOUSE

(Frozen Shrimps, Squids, Cuttle Fish, Mackerels, Seer Fish, Sardines, Pomfrets, Reefcod, Red Snapper, White Snapper, Ribbonfish, Salmon, Japanese Thread Fin etc., etc. in BLUEBAY Brand)

OFFICE :

Phone : 468801 - 5 lines, 464406, 464407 Fax : 91-824-467253

E-mail : baraka@satyam.net.in Website : www.barakaindia.com

Grams : OVERSEAS ULLAL

BARAKA COLD STORAGE

BEACH ROAD, ULLAL, MANGALORE

BARAKA OVERSEAS COCHIN

PALLURUTHY, COCHIN - 682 006, KERALA

PHONE : 232498/231883/233736 FAX : 91-484-233734

BARAKA OVERSEAS

AAMIR COMPLEX, EDACOCHIN-682 006

PHONE : 235622/235623/234936 FAX : 91-484-232279

BARAKA OVERSEAS, GOA

SUVIDHA COMPLEX, FLAT NO. BT-10, NEAR TILAK MAIDAN, KHAREWADE,
VASCO-DA-GAMA, GOA - 403 802

PHONE : 0832-514344. FACTORY : TEL : 0832-555510/555640 FAX : 91-832-555816

Mud Crab

Culture and Fattening Techniques, Status and Prospects

A. Mohammed Savad and P. Rajeev Raghavan*
Department of Zoology and Aquaculture St Albert's College, Kochi Kerala

Introduction

Among the marine crustaceans, found along the Indian coasts, crabs rank third after shrimps and lobsters by virtue of the importance as an esteemed seafood delicacy and also by the value of fishery they support. Due to their increasing demand as a favorite of epicurean gourmets, crabs have captured excellent markets in the developed countries. Of late there has been an increasing demand for live and whole cooked crabs in the different Asian and continental markets which has resulted in indiscriminate fishing activity and hence most of the wild resources are under heavy exploitation now. This is evident from the gradual decrease in crab landings from 34,293 tones in 1998 to 27,547 tones in 1999(C.M.F.R.I 2000). The increased demand for crab in the different markets and the depletion of resources along the coast has necessitated an urgent need for promoting crab culture and fattening in the different maritime states of the country.

Most of the commercially important edible crabs belong to the family Portunidae that includes *Scylla serrata* (Forskal), *S.tranquebarica* (Fabricius), *Portunus pelagicus* (Linnaeus) and *P. sanguinolentus* (Herbst). Among the edible species of mud cabs or mangrove crabs, *Scylla serrata* and *S. tranquebarica* are most ideal for commercial level aquaculture. They are valued for their delicious meat, nutritional and medicinal values and export potential and are in great demand in many countries especially in Thailand, Malaysia, Singapore, Hong Kong and fetch a very high price

Biology

The mud crabs, *Scylla serrata* and *S.tranquebarica* are temperature tolerant and naturally euryhaline species. The maximum size attained by a male and female of *S.tranquebarica* is around 220 cms/2kgs and 198mm/1.7kgs and that of S.serrata is 127/40gm and 124mm/350gm respectively. They are omnivorous feeders with crustaceans like shrimp, younger crab and bivalves being the major food source. The minimum size at first maturity for *S.serrata* is 83mm while in *S.tranguebarica* it is around 120mm. Mud crabs are continuous breeders with the breeding season varying from region to region. The number of eggs carried on the pleopods varies from 0.5 to 0.9million for *S.serrata* and 1.1 to 1.2 million for *S.tranquebarica*. The incubation period is about 14 days with a yellow colored egg, which turns into yellowish orange, light brown and eventually black before spawning.

Fishery

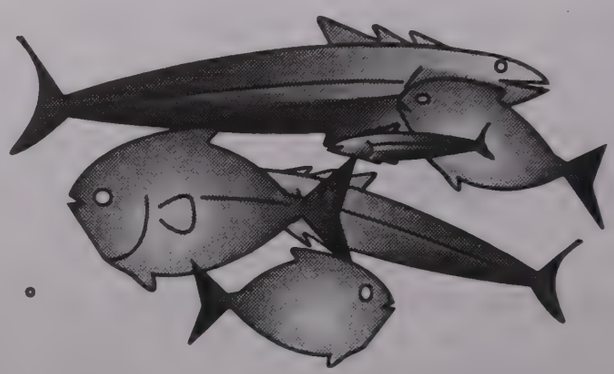
The fishing ground for mud crabs occurs along both the coast of India with the Eastern coast supporting a larger fishery than the West. The major fishing ground for the mud crab along the east coast of India are in the Sunderbans and 24 Parganas district in W.Bengal, Chilka lake particularly near Berhampur, Navpada, Satapada & Paradwip in Orissa, the villages around Kakinada and Rajamundhry in the Godavari estuary(Andhra Pradesh), Pulicat Lake, Killai backwaters, Porto Novo, Muthupet swamps, Pattukottai, Nagapattinam, Mandapam and Tuticorin(Tamil Nadu), Kochi, Vypeen, Neendakara and Kozhikode(Kerala), Nethravati estuary and Coondapur (Karnataka) and the Gulf of Kutch (Gujarat). The main gears employed in the crab fishery are long line, hook and line, gill net, Crab traps, drag nets, Cash net, bamboo traps, Stake nets etc.

Aquaculture

Presently, two distinct forms of farming practices are being done- "Culture" and "Fattening". The rearing and growing of juvenile crabs to a marketable size around 500gms and above is referred to as culture whereas fattening is the phenomenon of feeding of late premoult and early inter-moult stage (water crab) till they enter the late intermoult stage (hard crabs).

In both cases since there are no commercial hatcheries supplying seed crabs for the grow out systems the farmers are entirely dependent upon the natural seed resources for stocking in the farms. Seed crabs or baby crabs of 1.5-2 cm carapace width are collected from the estuaries and coastal waters

Manufactures & Exporters of
Black Tiger Shrimps, Sea White,
Pomfrets (IQF/I WP), Scampi,
HO & HL King Fish etc. Premium and Jewel Brand.



S.B Agro (India) Limited

, 21A, Shakespeare Sarani, 3rd Floor, Culcutta 700017, India.
Tel : (91)(33) 247 2476 (D)/240 4410 (D)
Fax : (91)(33)240 6831/242 9044
Tlx :021 4938 JAIN IN
e.mail :sbiltd@giascl101 .vsnl.net. in

Factory
Roychowk Fish Harbour Complex (CPT)
P.S Diamond Harbour
Dist 24-Parganas, W Bengal
Tel : 03174-75423/4/5
Fax 03174 75421

S3/914 Macheswar
Industrial Estate,
Sector 'A', Zone 'B' Bhubaneswar -751010
Tel : 0674 504985/ 520797
Fax 0674 507101/ 509082

by using bamboo traps, lifts nets and scissor nets. Alternatively megalopa larvae may be collected from the wild and those raised to seed crabs in nurseries are transferred to the grow out side after acclimation.

The mud crabs resources in the wild are facing serious depletion and their population is dwindling. In the context, the future expansion of the industry will have to depend upon hatchery - produced seed for stocking the ponds. Research and experimental trials for developing larval rearing technologies of Mud crabs have been undertaken by various research organizations like The Central Institute of Brackishwater Aquaeulture (CIBA), Chennai and The Central Marine Fisheries Institute (CMFRI) at their Mandapam research center have met with considerable success. A brief review of the hatchery technology of Mud crab (*Scylla* spp) is mentioned here.

Hatchery Management

Procurement of Berried female crabs

- Female crabs carrying egg mass attached to the abdominal pleopods are called Ovigerous or berried females. The berried females collected from the wild are transported to the hatchery in containers having saline brackish water.

Stocking - Berried females brought to the hatchery are stocked in 250-500 liter tanks containing filtered sea water and fed animal protein like clam meat or mussel meat. Artificial feed may also be given. The number of eggs carried in the berry varies from 1-8 million.

Incubation - The incubation period varies from 7-11 days at 28-30°C and 16-17 days at 23-25°C. As the incubation period progresses the orange colour of the berry gradually changes to brown and then to black.

Hatching - The liberation of the zoea larvae generally takes place during the night. The zoea larvae being photosensitive colonize the upper surface of the water. Usually 7-20 days are taken for embryonic development and depend upon the temperature and salinity of the medium.

Larval rearing - There are eight zoea stages in the development of the larger species (*S. tranquebarica*) having different morphological features. Usually zoea of 1-3 stages clings to the abdomen of the mother. The first 5 stages are non-feeding and develop at the remaining yolk. Feeding usually commences in the VI zoeal stage. Within 10-15 days the zoea larvae metamorphose into megalopa stage. The ideal water temperature for the development of the larvae of this species was found to be in the range of 18-30°C. The hatchery design and management practices play an important role in determining the survival rate of zoea larvae. Hatchery tanks with continuous flow of water are recommended. The successes of larviculture operations largely depend upon the designing of the feeding regime. The marine rotifer *Brachionus plicatilis* raised in chlorella culture is found to be the best live feed organism as it contains highly unsaturated fatty acids. Chlorella and rotifer culture are maintained separately to meet the requirements in the crab hatchery. Apart from these live feeds, high protein micropelleted diets as used widely in the Japanese and Malaysian hatcheries and other supplementary diets will promote efforts towards the large scale production of seed crabs for commercial level aquaculture in the country. Preventive measures should also be employed against different bacterial and ciliate infections that are commonly associated with larval stages of crabs.

Nursery Rearing

Megalopa larva is the ideal stage for stocking in nursery ponds and takes around a month to grow to a body weight of about 30gms. The nursery ponds are usually 15-20 sq.m, rectangular concrete tanks lined with 3-4 cm sand layer at the bottom. These tanks are filled with 1 m of interstitial seawater of 30-35 ppt salinity, which is changed two, or three times a day. During this stage, the feed of the larvae mainly consist of chopped shrimp and fishmeal. The megalopa becomes a benthic larval crab in around 5 days time. The salinity is brought down to 15-20 ppt and so is the feeding intensity to a single time at about 10-12% of the biomass.

Grow-out operation

As mentioned, two distinct patterns of crab farming are practiced "Culture" referring to the rearing of juvenile crab to mark able size of 500gms and "Fattening" - feeding of large sized water crabs until they become hard.

Culture - A pond size of 0.5 to 1 acre is suitable for crab culture. Larger ponds of more than 1 acre can also be used for this purpose. Sandy soils with a mixture of 50% clay are ideal for crab culture. Ponds should be constructed in such a way that it should hold about 3.5-4' of water towards inlet and 4.5-5 ' towards outlet. Flow through mechanism of water exchange is required so as to remove left over organic food and also excretory material. Nylon net fences are to be constructed on the dyke to prevent escape of crab during night hour. In addition, a large number of (1000-1300) stone ware pipes of 1" diameter and 1 1/2 " length should be kept at the bottom of the pond throughout the dyke as hideouts for animal.

As in the case of other crustaceans, crab too grow in size and weight by the phenomenon of moulting or "ecdysis". Moulting is periodical and takes place every week, every fortnight or every month depending upon the age and size of the crab. During this time the

With Best Compliments from:

R F EXPORTS

(A Govt. Recognised Export House)

ERAMALLOOR
ALAPPUZHA - 688 537
KERALA, INDIA
Tel: 91-478872428/ 873353/ 874416
Fax: 91-478873354
E-mail: rfexport@satyam.net.in
Website: www.rfexports.com

Processors and Exporters of all kinds of Frozen Seafoods to all parts of the world

crab exuviates the old calcified cuticle and a new one is formed in its place. The crab becomes very soft after leaving the cuticle and in such conditions chances of attack by other crabs are more. To encounter this, hideout pipes are placed on the bottom so that crabs can enter into it before moulting. Crabs moult inside the pipe and after the cuticle turns hard, come to feed. After each moult 30120% increase in weight may be observed depending on the size and age of crab. Females have been observed to grow faster than males.

During culture period crabs are fed soft-shelled snails or trash fish at a daily ration of 5-10% of the biomass. In Polyculture along with shrimps, trash fish, snail meat and pelleted shrimp feed are given in combinations. Feeding snails to the crabs to promote gonadal maturation as done on the lines of Taiwanese farmers can be attempted as the ripe ovaries are said to be highly expensive in the oriental markets and are said to fetch very high prices.

The major water quality parameters to be followed in crab culture ponds are:

Temperature	: 24-30° C
Salinity :	: 23-34 ppt
D.O	: less than or equal to 2.5ml/l
pH	: 8.0-8.5

Fattening - Crab fattening ponds are similar to culture ponds except for that the hide out pipes are not necessary at the pond bottom since the crabs are not allowed to moult in the fattening ponds. These ponds are also smaller in size (0.1 ha) and with a water holding capacity of 15-20 m depth. Crabs, which have crossed 450 gm in weight, and water crabs that are over 500 gm are transferred to this pond and fed for around 20- 30 days. During this period crabs put on weight up to 7-8 % and become hard. Feeding is carried out as in culture ponds and the daily ration varies from 7-10% of the body weight. The fattened crabs would be in the range of 450-650 gm. In a year, around 8-12 cycles of fattening can be carried out depending on the water quality parameters prevalent in the region.

Harvesting - Harvest technology of crabs is based on its growth, behavioral patterns, moult cycle and market needs. Only large and hard crabs (late inter moult and early pre moult stage) are exported and so only those need to be harvested. After attainment of market size, crabs are harvested by drawing the pond water completely. The crabs may take shelter in the hide outs, trenches etc and can be captured by scoop nets, Baits, umbrella nets, hooks etc.

Marketing - Harvested crabs are marketed in both live and in frozen forms. For live marketing the harvested crabs are tied individually with plastic ropes or water soaked ropes made of rice straw. Mud crabs are also marketed as frozen crabmeat, frozen stuffed crab etc and exported.

Economics - The economic analysis of mud crab farming practices in the most of the South East Asian countries and in India have established that crab culture is highly profitable when compared with other forms of aquaculture practices due to the increasing prices of crab in the international market.

According to a recently published report, out of the capital investments required for the construction of a 1 ha farm, cost of pond construction and fencing formed about 14%. Of the operational costs feed represented 8%, labour 12%, seed 73%, depreciation 20% and interest on capital, marketing, fertilization and maintenance formed the rest.

Problems and Prospects

When compared with shrimp farming which has already established itself in Asia-Pacific, culture of mud crabs is only picking up in many countries especially in Asia. The major constraints that are hampering the growth of the industry are inadequate supply of stockable crabs and the development of a standardized hatchery technology for supply of baby crabs for commercial aquaculture. Studies relating to the nutritional requirements of the larvae and the management of water quality in hatchery and culture ponds need to be given much importance. The nursery and breeding grounds of commercially important species along in mangroves can be protected from indiscriminate exploitation. Poly culture of different species of mud crabs with compatible species of fishes like Milk fish (*Chanos chanos*), Mullets, (*Mugil* spp) and various species of shrimps can also be tried on an experimental scale. Pen culture in mangroves can be popularized where net enclosures are constructed to grow mud crabs in mangroves in the tidal zones. This technique is environmentally friendly, sustainable and provides additional income for the coastal communities. This system can be popularized in the states of a Tamil Nadu and Orissa and also in Andaman and Nicobar Islands where there are extensive mangrove systems.

In India the importance of live mud crab as export commodity has opened up great opportunities for crab culture and fattening. High demand for live and frozen crabs in the international markets and the very high price offered makes mud crab culture an attractive industry. Coupled with this, the availability of a vast stretch of suitable land, tropical climate, abundant seed resources and low cost labour are all considered favorable for the development of this industry in the country. People in the various maritime states have already taken up crab farming as an alternative source of income generation in the coastal rural sector.

CHERUKATTU INDUSTRIES

MARINE DIVISION

Processors and Exporters of

SUNI Brand

Frozen Shrimp, Squid, Cuttlefish, Ribbonfish

Office

A/P/ IV-470-A, Arookutty Ferry Road

Phone: 91-478-873056/875029/875156

Fax: 91-478-874029

Factory

A/P XII/555, Chandiroor, Alleppey

Phone: 91-478-872366 Mobile: 98460 48591

Mid-term Review of Monetary and Credit Policy

Highlights

- RBI cuts Bank Rate by 0.50 percentage point, from 7.0 per cent to 6.50 per cent to touch its lowest since May 1973.
- RBI reduces CRR by 2.0 percentage points from 7.50 per cent to 5.50 per cent, releasing on additional liquidity of Rs.6,000 crore to banks. RBI also removes most of the exemptions available on CRR.
- Interest rate paid on eligible CRR balances increased further to the level of Bank Rate i.e. 6.5 per cent (from 6.0 per cent since April 21, 2001 and 4.0 per cent earlier).
- Monetary Policy stance to continue as in the first half of the year.
- In view of global uncertainties, a projection in the range of 5.0 per cent to 6.0 per cent growth rate for 2001-02 considered reasonable for monetary management.
- Measures to strengthen financial system to continue.
- RBI provides operational flexibility to banks in "Loan System" for credit delivery.
- RBI initiates steps to closely monitor non-SLR investments by banks and FIs.
- RBI Current Account Facility being rationalised.

Mid-term Review of Monetary and Credit Policy for the year 2001-2002

Dr. Bimal Jalan. Governor, in a meeting with Chief Executives of major commercial banks presented the Mid-term Review of Monetary and Credit Policy for 2001-02. After reviewing the domestic and external developments, Governor stated that despite several uncertainties, the fundamentals of the economy, as reflected in moderate inflation, stable and low interest rates, high foreign exchange reserves, large foodgrains stock and competitive advantage of information technology related industries, are strong. He further stated that according to the present indicators, the liquidity in the system will remain adequate to meet all legimate requirements for credit. He said that unless circumstances change unexpectedly RBI will endeavor to maintain the current interest rate environment. Considering the likely rate of growth in agriculture during the current year, the unfavourable behaviour of industrial and export sectors, taking in view of the global uncertainty, Governor mentioned that a firm projection of revised growth rate for the year as a whole is difficult. However, considering various factors, and assuming no further serious disruption in the world economic environment, at this stage, he felt that a projection in the range of 5.0 to 6.0 per cent growth rate in the current year may be reasonable for the purpose of credit and monetary management. Very few countries in the world would show a growth rate of this order in the current year, he added.

The agricultural growth in 2001-02 is expected to be significantly higher than the previous year. On the other hand, the position regarding revival of industrial sector and export growth in the first half of the current year was not favourable.

I. Mid-term Review of Macroeconomic and Monetary Developments

Domestic Developments

2. On the domestic front, quoting India Meteorological Department and the Ministry of Agriculture, Governor stated that the agricultural growth in 2001-02 is expected to be significantly higher than the previous year. On the other hand, the position regarding revival of industrial sector and export growth in the first half of the current year was not favourable. Considering

3. Governor stated that the inflation outlook for the year appears comfortable as agricultural growth prospects remain positive, and foodgrain stocks are very high. The annual inflation rate is 3.2 per cent as against 7.4 per cent a year ago.

4. Governor indicated that the growth rates in money supply and aggregate deposits of scheduled commercial banks in the current financial year were slightly higher than the growth rates observed a year ago. He added that the relative

attractiveness of bank deposits has improved and if this deposit growth continued it may pose a challenge to the banking system in deploying resources, particularly in the context of sluggishness in credit and investment demand. Governor added that late in September and early October, there had been some pick up in non-food bank credit and other resource flows to the commercial sector from the banking system. Commenting on the sources contributing to the reserve money expansion he stated that while net RBI credit to the Central Government showed a modest increase, RBI's net foreign exchange assets increased significantly. He expected that the reserve money expansion may remain moderate during 2001-02.

5. While reviewing the borrowing programme of the Central Government, Governor mentioned that the Government market borrowing programme was conducted by elongating the maturity pattern and at a lower cost. The weighted average maturity of borrowing was 13.9 years against 10.6 years a year ago and the weighted yield at 9.96 per cent was lower by nearly 100 basis points. RBI continued to combine auction issues with acceptance of private placement of dated securities consistent with market conditions in its debt management policy.

6. The Centre's fiscal deficit upto August 2001 was higher and constituted about one half of the budget estimates for the current year. A steady increase in net foreign currency assets of the Reserve Bank combined with subdued real economic activity created a situation of excess liquidity during most part of the first half of the year. Commercial banks already hold government securities much in excess of the prescribed Statutory Liquidity Ratio (SLR) to the extent of Rs.1,29,450 crore, consisting 36.3 per cent of NDTL.

7. He stated that the overall interest rate structure had come down substantially in the last two years and continued to show a softening trend. The prime lending rates (PLRs) of scheduled commercial banks softened. As banks are permitted to lend to exporters and their prime customers at sub-PLR rates, the cost of bank borrowings to such corporates has come down even further. Long-term domestic deposit rates of public sector banks declined from 10.50 per cent in March 2001 to 9.25 per cent in October 2001.

8. As announced in the annual policy Statement of April 2001, during the first half of the fiscal year, the Reserve Bank continued to provide appropriate liquidity through its Repo operations. The interest rate environment also remained fairly soft across maturities as well as various instruments and the yield on 10-year government securities declined by about 100 basis points, between April and mid-October 2001.

External Developments

9. Governor expressed concern over the global slowdown in the world economy and the impact of September 11 events. He stated that the outlook for growth in major industrialised countries as also emerging economies has been adverse. Quoting IMF, he stated that the downturn in the emerging markets of Asia may continue for a longer period. However, India and China are less affected. India is relatively insulated from global slowdown because of its lower share of trade in GDP and service oriented and cost efficient information technology sector.

10. Consequent upon September 11 events, forex markets became volatile with rupee depreciating by 1.3 per cent during the first ten days and affecting the government securities market. Stability was restored in financial markets in particular money and government securities markets, after a series of measures were announced by the Reserve Bank between September 15 and 25, 2001. Mentioning that there was no perceptible upturn in industrial output, he hoped that as global markets gain back momentum after some time, it would have a favourable impact on the investment climate in India also.

The Governor stated that the outlook for growth in major industrialised countries as also emerging economies has been adverse. Quoting IMF, he stated that the downturn in the emerging markets of Asia may continue for a longer period.

11. Reiterating India's experience in managing the external sector during periods of external and domestic uncertainties, he highlighted the need for continuous vigilance and the importance of building adequate safety nets to withstand the effects of unexpected shocks and market uncertainties. In this context, Governor mentioned that India's exchange rate policy of focusing on managing volatility with no fixed rate target, while allowing the underlying demand and supply conditions to determine the exchange rate movements over a period in an orderly way, has stood the test of time. RBI will continue to follow the same approach of watchfulness, caution and flexibility in regard to the forex market; monitor closely, the

developments in the financial markets at home and abroad and carefully coordinate its market operations with appropriate monetary, regulatory and other measures as considered necessary from time to time.

12. India's foreign exchange reserves have increased sharply by over US $ 10 billion from US $ 35.0 billion as on October 13, 2000 to US $ 45.1 billion by October 12, 2001. The overall approach to the management of India's foreign exchange reserves in recent years has reflected the changing composition of balance of payments, and has endeavoured to reflect the "liquidity risks" associated with different types of flows and other requirements. The policy for reserve management is thus judiciously built upon a host of identifiable factors and other contingencies. Governor expressed confidence about India's comfortable foreign exchange reserves but cautioned that there can be no cause for complacency. He mentioned that the quantum of reserves in the long run is in line with the rate of growth in the economy, the share of external sector in the economy and the size of risk-adjusted capital flows. This provides greater security against unfavourable or unanticipated developments of the type witnessed recently as well as during earlier years.

13. On account of global slowdown, exports have not done well during the current year and imports increased by 2.5 per cent as against an increase of 13.8 per cent last year. Trade deficit in the first five months of the current financial year at US $ 4.6 billion was higher than that of US $ 3.7 billion in the same period last year. For the rest of the year, there is some uncertainty on the likely course of international oil prices. On present reckoning, it is expected that the current account deficit for the year 2001-02 will still be well below 2.0 per cent of GDP.

14. Governor recalled that as part of the efforts to provide support to exporters during the prevailing period of global uncertainty, the Reserve Bank advised reduction in ceiling interest rates on rupee export credit by 1.0 percentage point across the board for a period of six months. Taking into account forward premia, the effective interest cost on rupee export credit is only 3.0-4.0 per cent (assuming a forward premia of 5.0 per cent), which is internationally competitive. Similarly, exporters are free to avail of foreign currency loans in the currency of their choice at internationally competitive rates.

15. In the past, several measures have been introduced to ensure timely delivery of credit to exporters at reasonable cost and removal of procedural hassles. He mentioned the work of the survey on exporters' satisfaction has been launched by the National Council of Applied Economic Research (NCAER), New Delhi.

16. In the recent period, procedures for financial transactions such as remittances, investments and maintenance of bank accounts, etc., for non-residents have been considerably simplified. Foreign direct investment (FDI) is permitted under the automatic route for most activities except in certain circumstances and for a very small negative list. Indian Companies are allowed to increase the FII investment limit upto the sectoral caps/statutory ceilings as applicable. A number of steps have been taken to improve liquidity in the ADR/GDR market and to give opportunity to Indian shareholders to divest their shareholding in the ADR/GDR market abroad. Indian companies wishing to make acquisitions of foreign companies or direct investment abroad in Joint Ventures/Wholly Owned Subsidiaries can now invest upto US $ 50 million on an annual basis through automatic route with additional block allocation of foreign exchange subject to certain conditions.

17. Over a period, considerable flexibility has been given to the corporates to hedge their forex exposure in the market. Instruments available to the corporates for hedging their exchange risks include forward exchange cover, currency options, foreign currency-rupee swaps, hedging of the loan exposures etc. Banks are also allowed to hedge their asset-liability portfolio, after obtaining necessary policy approval in this regard from their top management.

It is observed that sometimes a noticeable portion of the corporate foreign currency commitments tend to remain unhedged by the coporates on the basis of their perceptions of the market and these could impact the overall financial status of the corporates under circumstances of severe uncertainties.

18. It is observed that sometimes a noticeable portion of the corporate foreign currency commitments tend to remain unhedged by the coporates on the basis of their perceptions of the market and these could impact the overall financial status of the corporates under circumstances of severe uncertainties. Hence, he desired that banks who have large exposures to such corporates to put in place a system for monitoring such unhedged external exposures.

19. The Reserve Bank will continue

with its efforts to simplify procedures, reduce documentation requirements and further liberalise opportunities for productive investment in India by NRIs and others and by Indian corporates/ entities abroad. Governor welcomed further suggestions from experts, corporates and market participants in these areas through e-mail at helpnri@rbi.org.in

II. Stance of Monetary Policy for the Second Half of 2001-2002

20. Governor recalled that the annual policy Statement of April 2001 had indicated that under normal circumstances and barring emergence of any adverse and unexpected developments in domestic or external sectors, the overall stance of monetary policy for 2001-02 will be: provision of adequate liquidity to meet credit growth and support revival of investment demand, and imparting greater flexibility to the interest rate regime in the medium-term, to continue the present stable interest rate environment with a preference for softening to the extent the evolving situation warrants.

21. During the first half of the year, Governor indicated that it was feasible to maintain adequate liquidity in the market, primarily through flexible operation of repos and reverse repos under LAF combined with open market operations, when necessary. Notwithstanding a high level of market borrowing by the Government, it was also feasible to maintain a stable interest rate environment, with further softening of interest rates.

22. At the short end of the market, the average call money rate came down sharply from 8.6 per cent in early-April to 7.0 per cent in mid-October 2001. During this period, the LAF repo rate also came down from 7.0 per cent to 6.5 per cent. The CRR was reduced by 50 basis points to 7.5 per cent, effective May 19, 2001. Responding to these operations, the interest rates in other money market instruments also showed a declining trend. At the long end of the market, the secondary market yields on government paper in the range of 10-20 years have softened from 10.08-10.70 per cent in April to 9.12-9.92 per cent by mid-October 2001.

23. The decline in inflation rate since the mid-1990s, despite occasional supply and external shocks has had a positive impact on inflation expectations. Because of this, it has been possible to reduce nominal interest rates on a sustained basis despite a high level of fiscal deficit and other structural rigidities. While the risks of inflation are relatively low, as of now, in the context of ample liquidity already available in the system, RBI will continue to carefully manage the liquidity with a judicious mix of the range of instruments available with it.

24. Despite several uncertainties, Governor felt that the fundamentals of the economy as reflected in moderate inflation, stable and low interest rates, high foreign exchange reserves, large foodgrain stocks and competitive advantage of information technology related industries, are still strong. The prospects for agricultural growth during this year remain positive. Global and domestic inflationary outlook currently continues to be favourable. Governor, therefore, proposed to continue with the overall stance of monetary policy announced in the April Statement for the remaining half of the current year and ensure that all legitimate requirements for credit are met consistent with price stability. Unless circumstances change unexpectedly, RBI will also endeavour to maintain the current interest rate environment.

25. Governor emphasised that the Bank Rate will continue to remain the principal signaling instrument in so far as RBI is concerned, providing directional guidance to the extent feasible, to general level of interest rates. The LAF rates would operate around the Bank Rate, with a flexible corridor, as more active operating instruments for day-to-day liquidity management and steering short-term interest rates.

26. Governor, however, cautioned that while all efforts will be made to maintain the current stance of monetary policy, two caveats are necessary in order to ensure that banks and market participants do not take too complacent a view on the current monetary and interest rate environment. First, in their portfolio management, banks, primary dealers (PDs) and other market participants must explicitly take into account that the interest rate environment can change quite dramatically within a very short period of time. The substantial decline in interest rates in the last couple of years has resulted in large gains, realised and unrealised, to holders of medium and long-term securities. It is of utmost importance that these gains are not frittered away or used for illiquid market operations. Second, it needs to be recognised that in view of certain structural characteristics of our financial system, the scope for further softening in lending rates by banks and other financial intermediaries is limited. Among the factors, Governor mentioned :

The preference for fixed interest rates on term deposits effectively reduced the flexibility that banks have in lowering their lending rates in the short run.

- Holders of term deposits in banks generally belong to fixed income groups and expect a reasonable nominal interest rate, in excess of the long-term rate of inflation. This constrains the ability of banks to effect further reduction in their lending rates without affecting their deposit mobilisation and the growth of financial savings over the medium-term.
- The preference for fixed interest rates on term deposits effectively reduced the flexibility that banks have in lowering their lending rates in the short run.
- For public sector banks, the average cost of funds is over 7.0 per cent, combined with non-interest operating expenses of 2.5 to 3.0 per cent of total assets, puts pressure on the required spread over cost of funds. Relatively high overhang of Non-Performing Assets (NPAs) pushes up further the lending rates.

27. It is necessary to continue with the on-going efforts to reduce the impact of the above structural constraints on the flexibility of our interest rate structure. Recently, the Government has taken important steps to reduce the prevailing interest rates on contractual savings like Provident Funds and National Saving Schemes. A more sustainable and flexible interest rate regime for contractual savings has also been recommended by the Expert Committee set up by the Government (Chairman: Dr. Y.V. Reddy). It will also be highly desirable for banks to move over to a variable interest rate structure on longer-term deposits as early as possible. Since interest rates could vary in both directions, depending on the phase of the business cycle and inflationary outlook, a variable interest rate regime on long-term deposits does not necessarily imply lowering of the average interest rate earned by depositors over a period of time (compared with a fixed rate regime, which favours old deposits over new deposits when interest rates are coming down, and vice versa when rates are moving in the opposite direction). In addition, banks have to put in their best efforts to reduce their operating costs over time by improving productivity and increasing their volume of lending.

III. Financial Sector Reforms andMonetary Policy Measures

28. Governor briefly reviewed the progress made so far in respect of structural measures initiated by the Bank in the recent past to improve the functioning of the various segments of financial markets and announced modifications to some of them. He pointed out that as far as possible, changes proposed, had been decided after extensive consultations with experts and market participants and suggestions made by commentators in media as well as specialised journals.

Recent Financial Market Developments

29. Governor said that developments in equity market since March 2001, and involvement of a few banks in providing substantial support to a few stock-broking entities, contrary to RBI guidelines and normal prudential requirements, have raised concerns regarding the potential vulnerability in India's financial sector. As such, it was possible, through temporary and limited liquidity support measures, to avoid the "contagion" spreading from their activities in the equity market to the banking sector as a whole or to other important segments of the financial sector, particularly the money and government securities markets. The scope for "regulatory forbearance" has to be minimized in the event of emerging weaknesses in a financial institution (irrespective of whether its ownership is co-operative, public or private).

30. The recent experience has also shown that irresponsible and unethical behaviour on the part of even a few co-operative banks in the country can have some contagion effect beyond the particular area or the State concerned and may cause severe harm to depositors, including smaller co-operative banks and impair confidence in the system. Measures for off-site monitoring and inspection, particularly in respect of weak banks and co-operative institutions, have already been introduced. RBI proposes to further strengthen its monitoring and supervisory machinery. In order to overcome supervisory problems arising from the present three-pronged and multi-level institutional system (consisting of the Centre, States and RBI), the Reserve Bank has suggested setting up of a new Apex Supervisory Body for the entire urban co-operative banking sector.

31. Governor said that the Reserve Bank welcomes the on-going constructive dialogue with UCBs and their representative associations. It will be prepared to further improve/modify specific measures subject only to one condition, i.e., providing an adequate, workable and transparent mechanism for protection of public deposits held in the co-operative sector.

32. Governor indicated that recent events have also brought to the fore the need for Boards of banks and financial institutions to exercise proper vigilance and supervision over the functioning of commercial banking and other financial institutions. The Reserve Bank proposes to set up a consultative group of directors of a select group of commercial banks and financial institutions to suggest, for consideration by Government/RBI, measures that should be taken to strengthen the internal supervisory role of Boards.

The following issues/measures were also discussed in the Statement:

With Best Compliments from

SEALAND FISHERIES (P) LTD

ADMINISTRATIVE OFFICE

139 Sector - A, Zone - B Mancheswer
Industrial Estate, Bhubaneswar, India 751010.
Ph :0674 - 580824 Fax : 91-0674-581060

PROCESSING PLANT

Biruan, N.H.-5, Sergarh Balasore.
Orissa, Pin : 756 060
Ph : (06782) 76417 (FACT.).

Brand "SEALAND"

COMPLETED 34 YEARS

IN SEAFOOD PROCESSING AND EXPORT FROM INDIA

UNDER THE SAME BRAND NAMES

"ROSS & MAHARAJA"

ESTD. 1966

M/s. CHEMMEENS (Regd.)

Cochin - 682 005, Kerala, India

Tel : 91-484-226549, 220924, 227257

Fax : 91-484-228103, 350665

E-mail : chemmeens@satyam.net.in

Monetary Measures

(a) Bank Rate

- On the basis of a review of macroeconomic and monetary developments, the Bank Rate is being reduced by 0.50 percentage point from 7.0 per cent to 6.50 per cent with effect from the close of business today (October 22, 2001). At this level, it is the lowest Bank Rate since May 1973.

(b) Cash Reserve Ratio - Reduction and Rationalisation

33. All scheduled commercial banks [excluding Regional Rural Banks (RRBs)] are, at present, required to maintain with the Reserve Bank of India a cash reserve ratio (CRR) of 7.5 per cent of their net demand and time liabilities (NDTL). While the statutory minimum requirement of CRR maintenance at 3.0 per cent is obligatory on the banks, additional CRR has been imposed from time to time. At the same time, over a period, various exemptions given to the banks on certain specific categories of liabilities for the CRR requirement. Exemptions and multiple prescriptions have increased the complexity of CRR as an instrument of liquidity management. With a view to rationalizing CRR prescription and moving towards the long-term goal of keeping CRR normally at the statutory level, important changes are proposed in respect of the coverage as well as the level of CRR :

- It is proposed to reduce the CRR by 200 basis points to 5.50 per cent from 7.50 per cent of NDTL. Effective from the fortnight beginning November 3, 2001, CRR will be reduced to 5.75 per cent; and effective fortnight beginning December 29, 2001, the CRR will be reduced further to 5.50 per cent of NDTL.
- At the same time, all the exemptions on the liabilities will be withdrawn except inter-bank liabilities, for the computation of NDTL (for requirement of maintenance of CRR) with effect from fortnight beginning November 3, 2001.

34. It is expected that these changes will facilitate the development of a short term yield curve, develop money market, reduce the regulatory arbitrage between banks and non-banks, enhance the availability of lendable resources with the banks and improve the efficiency of indirect instruments in the conduct of monetary policy.

- At the present level of NDTL, the combined impact of the above two measures will result in augmenting lendable resources of the banking system by about Rs.8,000 crore (about Rs.6,000 crore effective from November 3, 2001).
- RBI will continue to use the CRR instrument in both directions for liquidity management in addition to other instruments (such as, the LAF.)

c) Interest on Cash balances Maintained with RBI

- With effect from fortnight beginning November 3, 2001, the interest paid on eligible cash balances will be at the Bank Rate (i.e., 6.5 per cent).

Liquidity Adjustment Facility - Progress

35. The Liquidity Adjustment Facility (LAF), introduced in June 2000, has emerged as an effective and flexible instrument for influencing liquidity on a day-to-day basis. A package of measures was announced in the annual policy Statement in April 2001 encompassing changes in operating procedures of LAF, a strategy for smooth transition of call money market to pure inter-bank market and a programme for rationalisation of liquidity support available to the system. This has not caused any strain on the market. Volatility in call money rates has also come down significantly. It is encouraging to note that the volume of repo operations by non-bank participants has been increasing in recent period.

- In the context of improving the effectiveness of LAF, it is reiterated that in addition to overnight repos, RBI will also have the discretion to introduce longer-term repos upto 14-day period as and when required.

In the context of improving the effectiveness of LAF, it is reiterated that in addition to overnight repos, RBI will also have the discretion to introduce longer-term repos upto 14-day period as and when required.

Commercial Paper – Dematerialised Holding

36. RBI issued fresh guidelines for issuance of Commercial Paper (CP) on October 10, 2000 relaxing the terms and conditions and streamlining the procedures. Further, to facilitate conversion of physicals into demat, FIMMDA, in consultation with market participants, depositories and RBI, prepared the related guidelines and made them public on October 3, 2001, which seem to be working reasonably well.

Development of Government Securities Market

- The notified amount of 91-day Treasury Bills (TBs) has been increased to Rs.250 crore. It has also been ensured that both the 91-day and 364-day TBs mature on the

NAS FISHERIES PVT. LTD.

Manufacturers and exporters of fresh frozen marine products

Squid whole, whole cleaned as block,
squid rings and squid tentacles as block & IQF
Cuttlefish whole, whole cleaned and fillets as block
Octopus whole and whole cleaned as block & IQF

Regd. Office

Karthika Building, Thoppumpady, Cochin-682 005 (India)

Factory at:

XXII/1173-A, N.H. 47

Near Aroor-Edakochi Bridge, Edakochi, Cochin-682 006

Phone : 232363, 232373, 232383

Fax : 0484-231582,234393

E-mail nasmp@md4.vsnl.net.in/nasmarine@nasfisheries.com

Our brand name: 'NAS'

Associate concerns:

Karthika Marine Industries Pvt. Ltd.

Nas Marine Products

same day in order to facilitate the availability of adequate fungible stocks of TBs of varying maturities in the secondary market

- A Negotiated Dealing System (NDS) is being introduced with a view to facilitating electronic bidding in auctions and secondary market transactions in government securities and dissemination of information on trades on a real-time basis.
- The Clearing Corporation of India Limited (CCIL) was registered on April 30, 2001 under the Companies Act, 1956 with the State Bank of India as the chief promoter. The operationalisation of CCIL is expected to commence with a test run in November 2001.
- With the approval of the Government, the new uniform price auction format will be introduced on an experimental basis.
- A scheme of retail participation for government securities on non-competitive basis has been finalised.
- The Reserve Bank has prepared a consultative paper drawing a road map for developing Separate Trading of Registered Interest and Principal of Securities (STRIPS).

Review of the Satellite Dealer System

37. The Satellite Dealer (SD) system was introduced in 1996 to serve as a second tier to PDs in the government securities market with the particular objective of promoting retail segment.

- The Reserve Bank has decided to undertake a review of SD system to examine the scope for establishing a better linkage between SDs and PDs and thereby improving the SD system as an effective distribution channel at a retail level for government securities.

Prudential Measures

(a) Credit Information Bureau

38. The annual policy Statement of April 2001 had mentioned about the setting up of the Credit Information Bureau (CIB) to collect, process and share credit information on the borrowers among banks and FIs.

- In order to operationalise the process of collection and dissemination of the data on credit information by the CIB, RBI will constitute a Group drawing representation from CIB, Indian Banks' Association (IBA), select banks and FIs. The Group will examine the possibility of the CIB performing the role of collecting and disseminating information on the list of suit-filed accounts and the list of defaulters, including willful defaulters, which is presently handled by RBI.

(b) Non-SLR Investments by Banks and Financial Institutions

39. It has been observed that, of the investments by banks, a significant proportion of the banks' investments in non-SLR securities is through the private placement route. The non-transparent practices in this market could be a matter of concern.

- In order to contain the risks arising out of non-SLR investment portfolio of banks and FIs, in particular through the private placement route, it is proposed to issue further prudential guidelines to be observed by banks which will be finalised after further consultation with banks and FIs.
- Banks and FIs have already been advised that effective October 31, 2001, they will be permitted to make fresh investments and hold bonds and debentures, privately placed or otherwise, only in dematerialised form.
- To enable the transparency of the trades including nomenclature of the bonds, amount traded and the price at which traded, banks and FIs could evolve a reporting mechanism and the NSDL/CDSL can in turn disseminate such information to the market. These arrangements would apply uniformly to all bonds issued by corporates, banks, FIs and State and Central Government sponsored institutions directly or as Special Purpose Vehicles (SPVs).
- Overall, any proposals of direct or indirect financing of the Government budgets, directly or through SPVs should be eschewed and proposals should be for specific monitorable projects, particularly in capital-intensive and high-cost sectors, including infrastructure. Components of financing and returns need to be well defined and assessed.

(c) Transparency and Accounting Standards

40. As a further step in ensuring transparency and credibility of their financial positions, it has been decided that banks should furnish the following additional disclosures in the 'Notes on Accounts' in their balance sheets, from the year ending March 2002.

- Movement of provisions held towards NPAs and movement of provisions held towards depreciation on investments.
- It has been decided to set up a Working Group comprising representatives of Institute of Chartered Accountants of India (ICAI), banks and RBI to identify the compliance as also gaps in compliance with the accounting standards and recommend steps to eliminate/reduce the gaps.

Supervision and Monitoring

41. The Reserve Bank had introduced in 1999 off-site returns to monitor liquidity and interest rate risks on quarterly basis with the intention to finally move over to a fortnightly reporting system. The quarterly system has now stabilised.

With Best Compliments From

SAGAR GRANDHI EXPORTS PVT. LTD.
GVR EXPORTS PVT. LTD.

GVR
IRG

FACTORY / OFFICE :
GVR FOOD PARK
OLD SINGARAYAKONDA, PRAKASAM DISTRICT,
ANDHRA PRADESH - 523 101
TEL : 091-8598-36797 / 36798
FAX : 091-8598-36902

E-mail : gvr@md3.vsnl.net.in

CHENNAI OFFICE:
53, VENKATESAN STREET,
CHINTADRIPET,
CHENNAI - 600 002.
TEL : 91-44-8535559, 8533897, 8526711
FAX : 91-44-8526707
INDIA

BVRM. OFFICE:
16-7-2, KAMELA STREET,
BHIMAVARAM - 534 201
ANDHRA PRADESH
TEL : 08816-33083 / 34487
FAX : 08816-33356
INDIA.

LG LG SEAFOODS

Exporters
Of
Live Mud Crab, Cuttlefish Whole Cleaned,
Squid Whole Cleaned, PUD, Ribbonfish & other fishes

Visit our website: www.lgseafoods.com

Head Office:
61, Venkatesa Street
Chindaripet
Chennai-2
Phone : 8414922
Fax : 8414923
E-mail : lgvsnl.com

Branch:
PT Jacob Road
Thoppumpady
Chochin - 5
Phone : 221651, 211835
Fax : 225499
E-mail : lgcochin@vsnl.com

- The Basel Committee on Banking Supervision (BCBS) released the second set of consultative documents on New Capital Accord. RBI has forwarded its comments to Basel Committee, which have also been put on RBI website in May 2001.
- A scheme of Prompt Corrective Action (PCA), based on pre-determined trigger points, is planned as part of continued efforts to enhance the existing supervisory framework.
- In order to involve banks in the smooth switch-over to Risk-based Supervision (RBS) process, the Reserve Bank has released a discussion paper seeking comments/suggestions of experts/public. It is planned to hold a pilot run of the RBS approach in due course.

Settlement of Non-Performing Assets

42. Under the one-time settlement of NPAs scheme, the public sector banks have recovered a total sum of Rs.2,192 crore in respect of 5.23 lakh accounts as on July 30, 2001.

- Given that the purpose of these guidelines was to provide an opportunity for "one-time settlement" within the specified time period, and sufficient time has already been provided, it is not proposed to extend this scheme. However, the broad framework provided for settlement in the 1995 guidelines will continue to be in place, and banks are free to design and implement their own policies for recovery and write-off incorporating compromise and negotiated settlements with the approval of their Boards, particularly for old and unresolved cases falling under the NPA category.

Urban Co-operative Banks

43. As a follow-up, of April 2001 policy announcement after discussing various issues involved, RBI has submitted a draft Bill on setting up of a separate Supervisory Authority to the Central Government.

- In order to strengthen the supervisory mechanism, RBI has since introduced off-site monitoring system for scheduled UCBs.
- In response to representations received from UCBs and their federations, it is now proposed to allow UCBs to grant loans to individuals against security of shares, subject to certain parameters.
- As per the annual policy Statement of April 2001, UCBs were required to achieve certain higher proportion of their SLR holding in the form of government and other approved securities as a percentage of their Net Demand and Time Liabilities (NDTL) by March 31, 2002. UCBs and their federations have represented that, in current market conditions, many smaller UCBs were facing genuine difficulties in adhering to the time schedule in achieving the prescribed levels of SLR holding. In response to these representations, it is proposed to modify the time-frame for achieving the prescribed levels of SLR holding.
- The Reserve Bank has already issued guidelines relating to capital adequacy norms to be followed by UCBs. It is clarified that, under the existing guidelines, the scheduled UCBs are required to achieve the capital adequacy norms gradually by March 2004 and the non-scheduled UCBs by March 2005.

Credit Delivery Mechanism

(a) "Loan System" for Delivery of Bank Credit

44. The "Loan System" was introduced to minimise the risks of cash and liquidity management on the part of the banking system, caused by volatile movements in cash credit component of working capital.

- In the current environment of short-term investment opportunities available to both corporates and banks, banks will henceforth have the freedom to change the composition of working capital by increasing the cash credit component beyond 20 per cent, for working capital limits of Rs.10 crore and above, if they so desire.

The "Loan System" was introduced to minimise the risks of cash and liquidity management on the part of the banking system, caused by volatile movements in cash credit component of working capital.

(b) Consortium Arrangement for Food Credit

45. A Committee consisting of representatives of banks, RBI, Government of India and Food Corporation of India was constituted by the Reserve Bank for undertaking a review of the consortium arrangement for food credit.

- The Report of the Committee is under consideration in consultation with the concerned agencies and the Government.

(c) Kisan Credit Cards

46. Kisan Credit Cards (KCCs) Scheme for eligible agricultural farmers has proved to be successful.

- To accelerate the scheme of KCCs to cover all eligible agricultural farmers within the next 3 years, the Reserve Bank has advised all banks about their targets to be achieved for 2001-02.

Universal Banking

- The Reserve Bank intends to process applications promptly in the light of considerations outlined in RBI's circular to FIs on approach to Universal Banking in April 2001. In processing a specific proposal, the overwhelming consideration of the Reserve Bank will be to meet the strategic objectives of the concerned financial institution for meeting the varied needs of different categories of customers, while at the same time ensuring healthy competition in the financial system through transparent and equitable regulatory framework applicable to all the participants in banking business.

Non-Banking Financial Companies

47. The Reserve Bank had received applications for Certificate of Registration (CoR) from 36,505 Non-Banking Financial Companies (NBFCs), of which, 13,815 applications were approved and 18,355 were rejected as at the end of August 2001. RBI places substantial importance to further development of the NBFC sector along prudent lines.

- RBI has, therefore, been discussing with the informal Advisory Group of NBFCs, and also with various NBFC associations, the need to promote the formation of a Self Regulatory Organisation (SRO), particularly for the benefit of smaller NBFCs.

Technology Upgradation

48. To facilitate banks to effectively participate in the payment and settlement systems and to provide a road map of the various payment system projects, a draft Payment System Vision Document was prepared; based on the feedback received from banks and comments of the members of apex bodies such as the National Payments Council, the Vision Document is being finalised.

- The Indian Financial Network (INFINET) is already available for use by all banks and common inter-bank applications are being implemented on this network. One of the systems provided by the Reserve Bank for quick, safe and secure movement of funds in an electronic mode is the Electronic Funds Transfer (EFT).

Rationalisation of Current Account Facility by the Reserve Bank

- The operationalisation of the CCIL and the proposed implementation of NDS would also obviate the need for having current account with RBI by some of the non-bank entities. This issue was examined by a Group.

Legal Reforms

49. Major legal reforms has been initiated in the banking sector covering areas such as security laws, Negotiable Instruments Act, fraud on banks, regulatory framework of banking, etc., were indicated. Further progress in regard to various initiatives for legal reforms is given below:

- The Working Group constituted by the Government for suggesting changes in the provisions of Negotiable Instruments Act, 1881, has, inter alia, recommended the introduction of truncation of cheques and electronic cheques and suggested appropriate legal amendments. The Working Group on Asset Securitisation has drafted a Bill on Asset Securitisation which is under consideration of the Government. The draft legislation prepared by another Working Group constituted by the Government to examine the vesting of powers with banks and FIs for taking possession and sale of securities without intervention of the courts has been put on the RBI Website in August 2001 seeking comments from the public.
- Proposals regarding amendments to the Reserve Bank of India Act, 1934, Banking Regulation Act, 1949, Government Securities Bill in replacement of the Public Debt Act, 1944, are currently under consideration of the Government.
- For drafting a legislation on Payment Systems in India, an international consultant and an eminent Indian draftsman have been appointed by RBI in consultation with the National Payments Council.
- An Expert Committee on Bank Frauds (Chairman: Dr.N.L. Mitra) submitted its Report to RBI in September 2001 which has been put on the RBI website. The Committee examined and suggested both the preventive and curative aspects of bank frauds. The important recommendations of the Committee include: a need for including financial fraud as a criminal offence and amendments to the Indian Penal Code by including a new chapter on financial fraud; amendments to the Indian Evidence Act to shift the burden of proof on the accused person and special provision in the Code of Criminal Procedure for transferring the properties involved in the financial fraud and confiscating unlawful gains; and preventive measures including the development of Best Code Procedures by banks and FIs. The Report is being examined by the Reserve Bank.

International Financial Standards and Codes

- All the Advisory Groups constituted by the Standing Committee on International Financial Standards and Codes have submitted their Reports to the Chairman of the Standing Committee and these reports are placed on RBI Website www.rbi.org.in for wider dissemination.

Alpana Killawala
General Manager

Seafood Export Journal

GET YOUR MESSAGES ACROSS

The Seafood Export Journal monthly publication of the Seafood Exporters Association of India is circulated all over India and abroad, dealing exclusively and extensively on matters relating to seafood trade. The journal is read by seafood exporters, processors, seafood buyers and all other agencies connected with the industry. Advertisements in the journal, therefore will be an effective medium for you to get your message across to the places and people who matter in the seafood industry.

ADVERTISEMENT TARIFF

Multiple Insertions				
Position/page	Yearly		Half Yearly	
	RS.	US $	RS.	US $
Full Page*	10,000	1,200	6,000	1,000
Half Page*	6,000	720	3,600	700
Inside cover (colour)	40,000	2,400	22,000	2,000
Centre spread (colour)	40,000	2,400	22,000	2,000
Back Cover (colour)	60,000		32,000	2,500

* Note: Plus 25% extra for each additional colour

SUBSCRIPTION ORDER/RENEWAL FORM

We would like to subscribe/renew the subscription of the Seafood Export Journal from the month ..... to .....

The subscription fee of Rs. 500/- (US$50) for one year is enclosed vide Cheque/DD No .....
Dated .....

Please forward the Journal in the following address:

.....

.....

Name of the Subscriber:

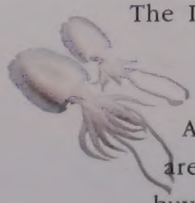
Telephone No:

Fax No./E-mail:

Contact:
The Editor, Seafood Export Journal, Seafood House, Willingdon Island, Cochin-682 003, Kerala.
Phone:0484-666152, 666572 Fax:0484-667470 E-mail:seaihq@md3.vsnl.net.in

Registered No. KL/CR/EKM/280/2001 VOL. XXXII No. 11 NOVEMBER, 2001 Regd. No. 17099/69

We did.



The Indian waters are home to an amazing treasure-trove of marine wealth.

As many as 2,500 different species are sought after by result-driven buyers. Worldwide.

Contributing to a staggering US$ 1.2 billion. And clocking a whopping 300% growth in the last decade.

Of course, with the comprehensive venture support extended by MPEDA. From identifying export opportunities to understanding consumer trends. And from updating the industry on global quality requirements to hosting international buyer-seller meets.

Talk to us. It could be the start of a global partnership.

TBWA ANTHEM

The Marine Products Export Development Authority, India

MPEDA House, Panampilly Avenue, Panampilly Nagar, Cochin - 682 036, Kerala, India.

Tel : ++91-484-311979, 312812 Fax : ++91-484-312812, 313361, 314467 e-mail : mpeda@vsnl.com

www.mpeda.com